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**IMPACT OF URINARY SYSTEM INFECTION ON THE DEVELOPMENT OF THE RISK OF PRETERM BIRTH**

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*Abstract: The article presents the results of studying the risk factors for urinary tract infection and its impact on the development of preterm labor. A prospective analysis was carried out. To solve the tasks set in the work, 128 women (Group I - 65 women with UTIs and the threat of PR and II 63 women with PR group without infections) and 25 women in the control group were conditionally healthy pregnant women who underwent enzyme-linked immunosorbent assay (ELISA), metalloproteinase level 12 (ADAM 12), cystatin C, RBP4 in blood serum. In the venous blood, the indicators of the hemostasis system were studied, the microbiocenoses of the vagina and the general analysis of urine in women with a threat were studied.*

*Keywords: vaginal microbiocenosis, urinary tract infections, asymptomatic bacteriuria, pregnancy, preterm birth.*

**Relevance.**

In recent years, the frequency of preterm birth in Uzbekistan has remained within the range of 9-15%, in Europe - 5-9%, and in the USA it has even increased to 9-12%. Perinatal mortality in preterm infants is observed more than 33 times more often than in full-term infants. In addition, about 70% of early neonatal deaths are associated with prematurity [1,2,3]. To date, the solution to this problem lies in the timely diagnosis and subsequent prevention of the threat of PB. Despite the availability of a large number of clinical and laboratory methods for diagnosing threatening preterm, the issue of predicting the outcome of pregnancy and methods of treatment for the mother and fetus cannot be considered definitively resolved [4,5,6].

Pyelonephritis is one of the most common extragenital diseases during pregnancy, occurring in 8-12% of pregnant women. Its exacerbation in the process of gestation is facilitated by a complex of hormonal, water-electrolyte, immune and mechanical factors that are inextricably linked with pregnancy. Starting from the early stages of pregnancy, 80% of healthy women experience functional changes in the urinary tract, manifested by a decrease in tone and hypokinesia of the ureters. Complicated course of pregnancy in this pathology of the kidneys occurs in 82.3-89% of cases. It triggers an inflammatory response, releasing various inflammatory signaling molecules that promote contraction of the uterus and maturation of the cervix, which causes preterm labor. It is precisely this problem that remains one of the most relevant in modern obstetrics, requiring a third-party study and a comprehensive approach to its solution [7,8,9].

Among the risk factors for preterm birth, there are both medical factors, such as a history of preterm birth, spontaneous miscarriages, abortions, inflammatory diseases of the genital organs and urinary tract infections, as well as socio-demographic factors, including young age, low social level, unsettled family life and etc. [10,11,12].

A significant role in the occurrence of PB is played by the complicated course of pregnancy, most often it is the threat of its interruption. A special place is occupied by viral infections transferred during pregnancy, including SARS. In this vein, it is worth

noting the increase in the number of women at risk for the development of preterm birth, such as patients with a scar on the uterus, with severe extragenital diseases, etc. In addition, an increase in the frequency of PB is associated with the widespread introduction of assisted reproductive technologies, and therefore the number of multiple pregnancies, which are one of the risk factors for PR, has increased. However, these factors, analyzed individually or in combination, do not predict the outcome of preterm birth for the fetus [13,14].

**Purpose of the study:** To achieve early diagnosis of the threat of preterm labor against the background of urinary tract infection, taking into account the study of biochemical markers and to develop a scale for predicting the risk of developing a threat to childbirth.

**Materials and methods:** To solve the tasks set in the work, 128 women (Group I - 65 women with USS and the threat of PB and II - 63 women with PB without infections) and 25 control women are conditionally healthy pregnant women who will undergo enzyme immunoassay (ELISA). Level of metalloproteinase 12 (ADAM 12), cystatin C, RBP4 in blood serum. In venous blood, indicators of the hemostasis system will be studied. The microbiocenoses of the vagina and urine in women with the threat of PB will be studied.

**Results:** To solve the set tasks, a prospective analysis of the data was studied. The selection criteria for patients was the selection of high-risk pregnant groups, with various obstetric and somatic pathologies, with a gestation period of 22-36 ? weeks. When collecting an anamnesis, we took into account the place of residence of the patients, since this could depend on the period for pregnant women to see a doctor and receive asymptomatic bacteriuria during treatment and early diagnosis. It turned out that among the patients there were more women living in urban areas, while among the women of the control group there were more women living in the village. We also took into account the structure of employment of patients. Among the contingent of those examined with a physiologically proceeding pregnancy, there were more women working (8/32%), and among the patients in the main group there were more of those who were housewives (60%/60.3%). Among patients with PB, the group without infections was also dominated by female employees (6/9.5%).

Among the examined women there were students: with a physiological pregnancy 2/8%, with a PR group with IUS - 5/7.7% and with a PB group without IUS - 2/3.2%. When analyzing professional affiliation, we took into account the possible reaction of pregnant women to the occurrence and development of IUSs and the threat of PB. As can be seen from the presented data, the frequency of occurrence of US and the threat of PB did not depend on professional affiliations.

Each examined pregnant woman was compiled a separate observation card that answered the main questions on this problem: age, parity of pregnancy, anamnesis, diagnosis (basic, concomitant), clinical manifestations, course of labor (via natural routes and caesarean section) and the postpartum period.

All patients included in the study were in the same age period, the average age of which was  $29.8 \pm 3.8$  years in the group of women with IUSs and the threat of PB,  $28.4 \pm 4.7$  years in the group of women PR, the group without infections and  $26.3 \pm 3.2$  years in the group of women who made up the control group. Currently, the issue of the potential use of the level of biochemical agents as markers of the severity of the inflammatory response and predictors of prognosis in various pathologies in pregnant women is being widely discussed

**(Table 1).**

**Determination of the level of the enzyme Metalloproteinase-12**

The level of "Metalloproteinase-12" in the blood, ng/ml	Group I, pregnant women with BMI and threatened miscarriage (n=65)		Group II, pregnant women with threatened miscarriage without BMI (n=63)		control group (conditionally healthy) (n=25)	
	number	% in Group	number	% in Group	number	% in Group
untill 1,0	0	0,0	0	0,0	2	8,0
1,1 - 3,0	0	0,0	22	34,9	19	76,0
3,1 - 5,0	0	0,0	23	36,5	4	16,0
5,1 - 7,0	2	3,1	13	20,6	0	0,0
7,1 - 9,0	8	12,3	5	7,9	0	0,0
9,1 - 11,0	32	49,2	0	0,0	0	0,0
11,1 -13,0	20	30,8	0	0,0	0	0,0
13.1 and up	3	4,6	0	0,0	0	0,0
<b>Total:</b>	<b>65</b>	<b>100,0</b>	<b>63</b>	<b>100,0</b>	<b>25</b>	<b>100,0</b>

There was an association of high plasma levels of matrix metalloproteinase-12 (MMP-12) in pregnant women with BMI (9.1-11 ng/ml in 49.2% of women) than comparison of pregnant women with threatened miscarriage without BMI (7.1 -9.0 ng/ml in 7.9% of women) and the control group (3.1-5.0 ng/ml in 16% of women).

When analyzing somatic pathology in the examined women, it was revealed that most patients have a history of one or another disease (Table №2).

**Table 2.**  
**For past or existing diseases**

Somatic diseases	Group I, pregnant women with USG and threatened miscarriage (n=65)		Group II, pregnant women at risk of miscarriage without BMI (n=63)		control group (conditionally healthy) (n=25)	
	abs.num ber	% in group	abs.numbe r	% in group	abs.nu mber	% in group
IDA	63	96,92	54	85,71	0	0
Infectious and parasitic	2	3,1	2	3,2	0	0,0
Metabolic syndrome (obesity)	12	18,5	8	12,7	3	12,0
Endocrine diseases (thyroid)	22	33,8	20	31,7	8	32,0
Diseases of the blood, hematopoietic organs	17	26,2	14	22,2	0	0,0
Myopia various degrees	14	21,5	12	19,0	4	16,0
ENT diseases	2	3,1	2	3,2	0	0,0
CVD diseases	1	1,5	1	1,6	0	0,0
Diseases of the gastrointestinal tract	4	6,2	4	6,3	1	4,0
Diseases of the respiratory organs	9	13,8	10	15,9	2	8,0
Surgical intervention, diseases (ureter stenting)	2	3,1	2	3,2	0	0,0

Iron deficiency anemia also occurred among all women examined, but more often among women with IUSs and the threat of PB (96.92%). Obesity is the result of a metabolic disorder. Among patients with UTIs and the threat of PB, the incidence of obesity was 18.5% and the group of pregnant women with the threat of miscarriage without BMI was 12.7%. These or other diseases of the respiratory tract occurred in 2 women of the control group, in 15.9% of women without IUS and the threat of PB and



in 13.8% of women with IUS and the threat of PB. The incidence of thyroid diseases among women with IUS and the threat of PB was 33.8%, in the group of women without IUS and the threat of PB was (31.7%) and 8 women in the control group (32%). Diseases of the gastrointestinal tract were similarly encountered in patients with and without IUSs and the threat of PB (6.2% and 6.3%, respectively). It was also recorded in 1 women (4%) of the control group. The percentage of occurrence of diseases of the blood, hematopoietic organs was higher in women with IUS and the threat of PR (26.2%), it was less among women without IUS and the threat of PR (22.2%). Myopia of various degrees was found in women with UTI and the threat of PB of 21.5% and without UTI and the threat of PR of 19%.

**Conclusion.** The results of the analysis showed that the risk factors for acute gestational pyelonephritis should include: nulliparous women (73.8%) in the second half of pregnancy, with a burdened obstetric and gynecological history (72.1%) and the presence of extragenital diseases with a prevalence of foci of chronic infection. The occurrence of gestational pyelonephritis increases the risk of developing placental insufficiency up to 47.5%, amniotic fluid pathology - up to 29.5%, fetal growth retardation - up to 27.9%, gestational arterial hypertension - up to 40.9%, and severe preeclampsia - up to 11,5%. In addition, after acute gestational pyelonephritis, the probability of preterm birth increases to 14.8%, and the frequency of operative delivery increases to 32.8%. Thus, the above markers are a prognostic marker of urogenital infections at the risk of developing preterm labor, which is the main informative markers for the prevention of infectious diseases and septic complications at the risk of developing PR and perinatal lesions.

Since BMI poses a significant threat to the further course of pregnancy, if the development of this disease is suspected, all examinations are carried out on an emergency basis. Diagnostic search was sent to identify signs of UMI, assess the condition of the fetus and identify possible pathogens.

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