IJACT, Volume 3, Issue 1, 2025 ISSN: 2995-5378
http://medicaljournals.eu/index.php/IJACT

INTERNATIONAL JOURNAL OF ALTERNATIVE AND CONTEMPORARY THERAPY

Optimization of Diagnostics of Pregnant Women with Threatened Premature Birth

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Abstract: The problem of prematurity is one of the first in practical obstetrics, since it determines the level of perinatal mortality and morbidity. Premature babies account for 60-70% of early neonatal deaths and 65-75% of infant deaths. Stillbirth during preterm birth is 8-13 times more common than at term [7, 8]. Newborns weighing less than 1500 g are 200 times more likely to die than those weighing more than 2500 g, and if they survive, they are 10 times more likely to suffer from neurological and somatic complications [3, 10].

In this regard, the issues of timely identification and prevention of the causes of premature birth are currently becoming especially relevant.

Keywords: premature birth, vaginal pH measurement, phosphorylated protein-1, insulin-like growth factor binding, tocolytic therapy, prevention of fetal respiratory distress syndrome.

Relevance: In recent decades, the incidence of preterm birth in the world has remained consistently high and is on the rise (from 10% to 11.5%). In Russia, it is 7%. However, the transition to new criteria for live births will inevitably lead to an increase in the incidence of preterm births, and therefore makes the problem of preventing this serious complication of pregnancy one of the most important.

Premature birth, especially preterm birth, is a major cause of neonatal morbidity and mortality and is directly responsible for 60-70% of all neonatal losses VI Sidelnikova, AA (2003). Almost all surviving newborns with extremely low and very low birth weight develop respiratory distress syndrome (RDS), 30-40% develop bronchopulmonary dysplasia, 10-15% develop severe retinopathy, and almost one in three develop intraventricular hemorrhage (IVH). -4 degrees.

Fetoplacental insufficiency (FPI) plays a significant role in the genesis of preterm labor, in which the production of various proteins and hormones, in particular progesterone, by the placenta is reduced. This leads to persistent hypertonicity of the myometrium, impaired blood circulation in the placenta, thereby increasing fetal suffering and, ultimately, to premature birth (Podtetenev AD, Batrachnikova TV, 2000; De Lignieres B., 2008). Despite extensive experience in the use of β-adrenergic agonists (hexoprenaline sulfate, partusisten) in the treatment of threatened preterm labor, the rate of ineffectiveness of tocolysis and cardiovascular complications remains high. According to LL Su, M. Samuel, YS Chong (2010), the use of progesterone reduces the incidence of preterm labor by 35%.

Currently, the use of progesterone for the treatment of the risk of preterm birth is justified from the point of view of evidence-based medicine and is regulated by a new clinical protocol approved by order of the Ministry of Health and Social Development of the Russian Federation. 2011.

The aim of the study: To optimize the management of high-risk pregnant women and reduce the incidence of preterm birth by applying developed diagnostic and treatment measures. The retrospective group included 112 women with preterm birth, observed in antenatal clinics of Samarkand from 2004 to 2009. The prospective group included 124 women with a high risk of preterm birth, starting from early pregnancy, is to improve pregnancy outcomes by optimizing the management tactics of women at

risk of preterm birth. We conducted a retrospective analysis of the causes of preterm birth and assessed their outcomes for 2004-2009. Using the results obtained, we formed a prospective group of pregnant women at high risk of preterm birth. We developed a pregnancy management plan taking into account diagnostic criteria: the effectiveness of pH-metry of vaginal contents, the effectiveness of the Actim Partus test systems in diagnosing preterm birth, and the Actim Prom test system in diagnosing premature rupture of amniotic fluid were evaluated. We evaluated the effectiveness of various options for tocolytic therapy in preventing the risk of preterm birth, taking into account the duration of pregnancy and the need to prevent neonatal respiratory distress syndrome. Based on the data obtained, we developed a complex of therapeutic and diagnostic measures for the prevention of preterm birth on the basis of the state budgetary healthcare institution "Maternity Hospital No. 1" of the Kaliningrad region.

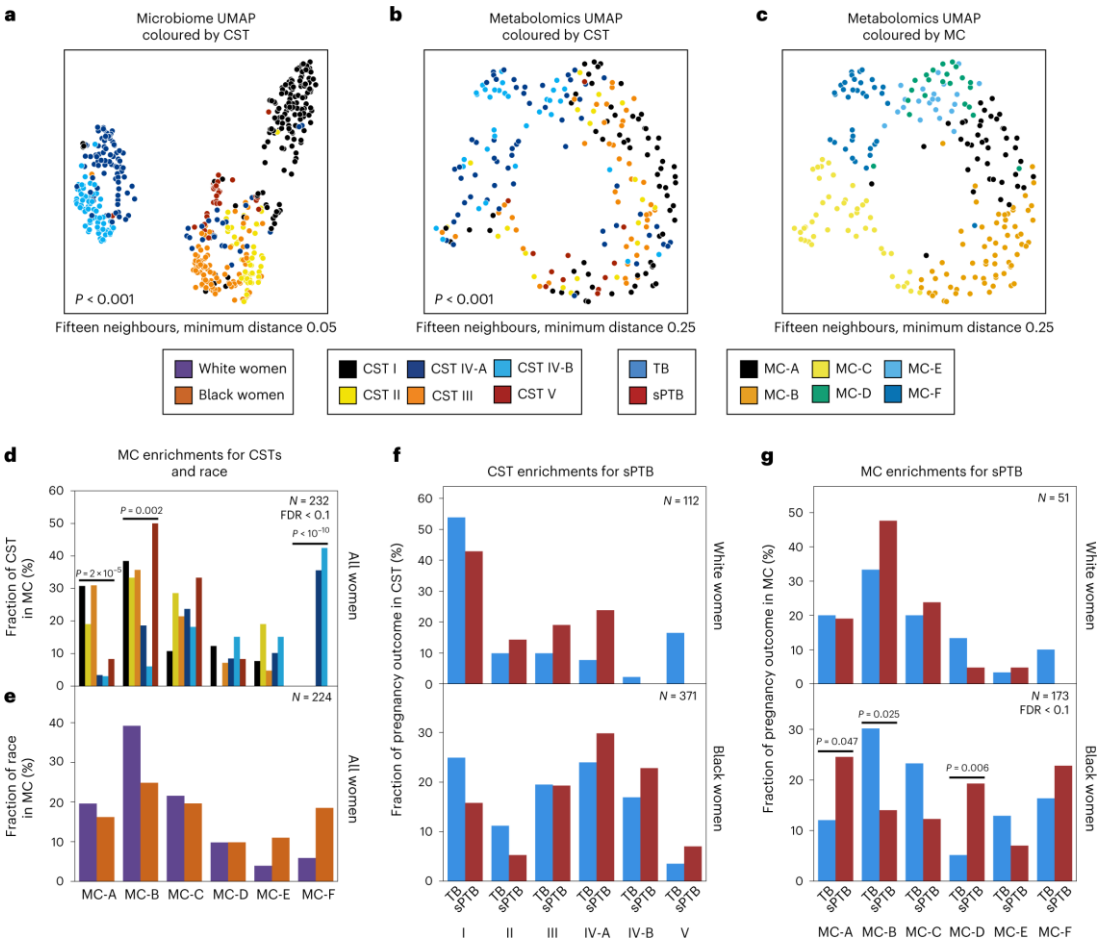
Materials and research methods

A retrospective analysis of the history of 112 premature births at 22-36 weeks of gestation in 2004-2009 was conducted. Questionnaires were developed to assess the level of risk of premature birth and its consequences. Based on the survey data, a prospective group of 124 pregnant women with a high risk of premature birth was formed in maternity hospital No. 1 in the Kaliningrad region. Observation of this group was carried out from 6-7 weeks of gestation until delivery with an assessment of outcomes for the fetus and mother. Pregnant women in the retrospective group were observed in the general network of antenatal clinics in Kaliningrad.

In the prospective group, pH-metry of the vaginal contents was performed in all pregnant women (self-monitoring) by marking on a replacement card, using a test glove (pH-balance system test). If the pH changed by more than 4.5, a doctor should be consulted for further examination and appropriate treatment.

Research results and discussion

In the retrospective group, all patients had complicated pregnancies. Starting from the first trimester, there was a risk of long-term pregnancy. 23 (19.5%) patients regularly visited antenatal clinics. 14 (11.86%) patients were enrolled at 6–8 weeks, 19 (16.1%) at 9–12 weeks, 35 (29.66%) at 13–18 weeks, and 27 (22.88%) after the 19th week. After retrospective analysis of 112 birth histories and collection of questionnaire data, 124 pregnant women with a high risk of preterm birth were selected for the prospective group. Some women had a combination of risk factors (1). The age of the women ranged from 20 to 38 years,



The mean age in both groups was 28.4 ± 2.8 years. Given that the prospective group consisted of high-risk pregnant women, progesterone was prescribed from the early stages of pregnancy until 20–22 weeks [14].

When conducting independent pH-metry of the vaginal contents in the entire prospective group, it was revealed that in 49 (39.5%) cases during the initial screening, the pH value was higher than 4.5 and in 11 (8.87%) cases - higher than 5.5. cases that can be explained by the destruction of lactobacteria or a sharp decrease in their number and a decrease in the protective microflora of the vagina. In 64 (51.6%) cases, the pH value did not exceed the norm and was 3.5-4.5. In patients with a pH above the normal level, bacterioscopic examination of the smear revealed bacterial vaginosis in 31 (25%), vaginal candidiasis in 11 (8.87%) and nonspecific vaginitis in 18 (14.5%).

In the second trimester, 34 (27.41%) pregnant women had a pH value above 4.5 and 6 (4.83%)

In 84 (67.74%) cases, the pH did not deviate from the normal values of 3.5-4.5. Smear bacterioscopy revealed bacterial vaginosis in 23 (18.57%), vaginal candidiasis in 8 (6.45%), and nonspecific vaginitis in 9 (7.25%).

In the third trimester, pH above 4.5 was detected in 8 (6.45%), bacterial vaginosis in 4 (3.23%), vaginal candidiasis in 1 (0.8%), and nonspecific vaginitis in 3 (2.4%). pregnant women. Normotenosis occurred in 116 (93.5%) cases, where the pH did not exceed 4.5.

In cases of bacterial vaginosis detected in the first trimester of pregnancy, vaginal sanitation was carried out with antiseptics, and vaginal candidiasis - with antifungal agents available at that time, followed by rehabilitation therapy. In the second trimester, vaginal antiseptics and low doses of antibiotics were used for sanitation. The quality of treatment was assessed based on the results of control bacterioscopy.

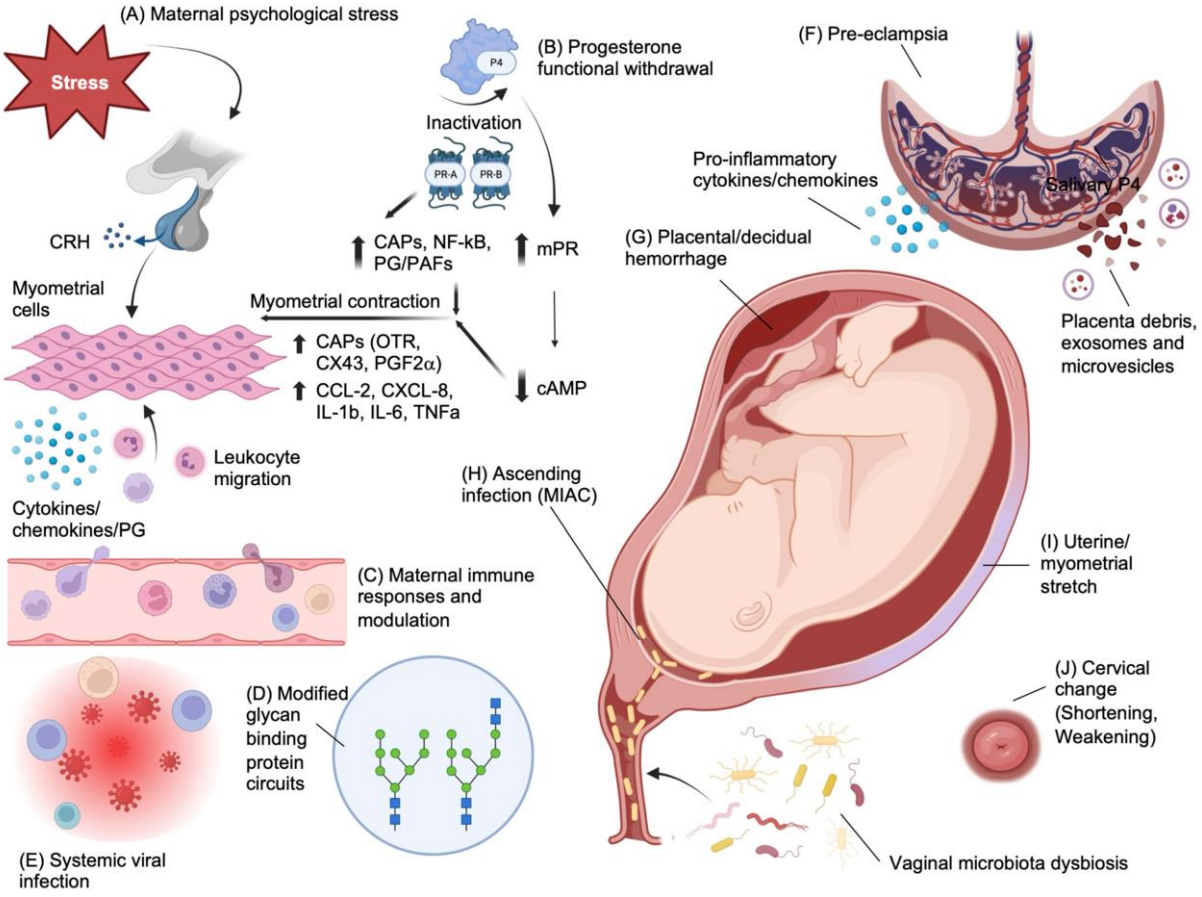
All pregnant women in the future group had a high level of trophoblastic β-glycoprotein, which was accumulated in early pregnancy. In 102 (82.25%) this indicator was within normal limits, in 22

(17.74%) pregnant women a deviation of 20-30% was detected, which was considered the initial stage of the development of placental insufficiency and complex metabolic therapy was carried out. in addition to early pregnancy. When examining the urinary system, bacteriuria was detected in 34 (27.41%) pregnant women, of which 20 (16.12%) had chronic pyelonephritis. Patients were treated together with nephrologists, and a drug for antibacterial therapy was selected based on the results of bacteriological urine culture. In 14 (11.29%) patients, asymptomatic bacteriuria was detected, they were prescribed amoxicillin from 9-10 weeks.

Active monitoring of the cervical status was carried out in 31 (25%) women with multiple pregnancies, of which 22 (17.74%) had twins, 9 (7.25%) had triplets, and 46 (37.09) had multiple intrauterine interventions. %). Ultrasound and manual examinations diagnosed isthmic-cervical insufficiency in 35 (28.22%) cases, surgical correction, tocolytic therapy with magnesium sulfate for 3-4 days, and vaginal sanitation with an antiseptic solution were performed.

In 85 (68.54%) pregnant women, the Actim-partus test was used due to complaints [12]. In 65 (52.4%) cases, a positive result was obtained, confirmed by manual and ultrasound examinations. Depending on the stage of pregnancy, these patients received tocolytic therapy in a hospital setting. At 22-28 weeks, 30 (24.19%) pregnant women received calcium channel blockers, at 28-36 weeks, 35 (28.22%) received therapy with beta-adrenergic agonists, which allowed to completely prevent fetal respiratory distress syndrome with betamethasone. .

Analyzing the results in the retrospective group (Table 3), it can be noted that 14 (12.5%) women at 22-27 weeks of gestation were delivered by cesarean section. Indications: severe gestosis and worsening of concomitant extragenital pathology in 7 (6.25%) cases; placenta previa complicated by bleeding in 5 (4.46%); premature detachment of a normally located placenta in 2 (1.79%) cases [5, 6]. In 5 (4.46%) cases, premature birth through the birth canal began with premature rupture of amniotic fluid. In the prospective group, no spontaneous abortions were observed up to 28 weeks.



At 28-33 weeks of gestation, 16 (14.28%) women in the retrospective group were delivered by cesarean section, in 10 cases according to fetal indications, in 4 (3.57%)

due to the onset of bleeding in the preterm period of the placenta. and in 2 (1.78%) cases - due to premature detachment of a normally located placenta. 6 (5.36%) pregnant women gave birth naturally: premature rupture of water - 4 (3.57%), isthmic-cervical insufficiency - 3 (2.68%), chronic viral-bacterial infection - 5 (4) . 46%, chronic pyelonephritis - 4 (3.57%), uterine malformation - 2 (1.79%) [1, 2, 13], placental insufficiency - 5 (4.24%) cases. In the prospective group, in 3 (2.41%) cases, labor was induced due to a severe progressive course of concomitant somatic pathology.

In the retrospective group, 15 (13.39%) women gave birth at 34–37 weeks of gestation, 11 (9.82%) of whom were delivered by cesarean section and 4 (3.57%) vaginally; in the prospective group, 23 (18.55%) women gave birth, 17 (13.71%) of whom were delivered by cesarean section and 6 (4.84%) vaginally. The equal proportion of cesarean and vaginal deliveries within the groups is explained by an attempt to reduce the risk of intrapartum trauma during premature birth [6, 11].

At 38–40 weeks of gestation, 96 (77.42%) women delivered in the prospective group, with a cesarean section rate of 9.68% and 12.5% in the retrospective group.

In the retrospective group, 127 children were born, in the prospective group - 139. In the retrospective group, 20 (15.75%) had a high rate of losses up to 28 weeks of pregnancy, due to which prevention of fetal respiratory syndrome was not carried out; the risk of purulent-septic complications [4, 9, 10]. 9 children of this gestational age (7.09%) were born alive with a weight of less than 800 g. Antenatal losses were in 6 cases (4.72%), intranatal losses in 5 (3.93%) (Table 4).

Birth outcomes in retrospective (n=127) and prospective (n=139) groups by gestational age

In the retrospective group at 28-33 weeks of gestation, complications of the neonatal period were observed: pneumonia - in 14 (58.33%) children, hyaline membrane disease - in 15 (62.5%), conjugation jaundice - in 13 (54.16%). %), pathology of the central nervous system - in 8 (33.3%) children. In the prospective group, pathology of the central nervous system and hyaline membrane disease prevailed. In the retrospective group, pneumonia was observed in 7 (36.84%) children born at 34-37 weeks, conjugation jaundice - in 11 (57.89%), edema syndrome - in 4 (21.05%), hemolytic disease - 2 (10.52%).), hyaline membrane disease - 12 (63.15%), malformations - 2 (10.5%). . In the prospective group, conjugated jaundice (46.87%), pneumonia 12.5%, hemolytic disease - 6.25%, edema syndrome - 18.75%, hyaline membrane disease - 18.75%, developmental defects - from 6.2% to 5% cases.

The next step was microscopy of vaginal smears and cultural examination of vaginal contents. Identification of the types of microorganisms was carried out using generally accepted methods. A highly sensitive linear test for the detection of phosphorylated insulin-like growth factor-binding protein-1 (PSIGF-1) in cervical secretion - the Actim-partus test - was used to predict preterm birth from 22 weeks of gestation. The condition of the cervix was assessed manually (Bishop scale) and using ultrasound. If asymptomatic bacteriuria was detected in a general urine test, a detailed examination of the urinary system was performed - ultrasound examination of the kidneys, bacterial culture of urine with determination of sensitivity to antibacterial drugs. All pregnant women underwent standard clinical, laboratory and instrumental studies, and their hormonal status was determined.

In the first trimester, vaginal sanitation was carried out with antiseptics; antiseptics, antibacterial and antimycotic agents, depending on the results obtained - in the second trimester, then restoration of vaginal pH by the introduction of ascorbic acid and eubiotics. In patients diagnosed with isthmic-cervical insufficiency, a suture was placed on the cervix at 12-14 weeks of pregnancy. In patients with bacteriuria, the amount of antibacterial prophylaxis depended on the results of bacterial culture (sensitivity to antibiotics). A course of metabolic therapy was performed to prevent placental insufficiency. The following drugs were used for tocolytic therapy: calcium channel blocker, β-adrenergic agonist in tablets and in the form of intravenous infusions.

Scientific novelty of the research

The effectiveness and feasibility of using gestagens to treat the risk of preterm birth and their effect on FPC function were determined in comparison with the use of -mimetics.

The characteristics of the hormonal function of the FPC and the state of volumetric blood flow (vascularization) of the placenta with the risk of premature birth and against the background of various treatment methods were determined.

A differential approach to the treatment of the risk of preterm birth has been developed, and indications and regimens for the use of gestagens in the presence of a risk of preterm birth have been defined.

The characteristics of the birth process, the postpartum period, and the first trimester of pregnancy after the use of various medications by pregnant women to treat the risk of premature birth of newborns and children were evaluated.

Practical importance

An algorithm for managing pregnant women at risk of preterm birth was developed, which made it possible to reduce the incidence of preterm birth by 1.3 times and perinatal mortality of premature babies by 1.5 times.

The effects of various therapy methods on pregnancy, childbirth, the postpartum period, the condition of newborns and children in the first six months of life were evaluated.

The advantage of using gestagens over β-mimetics in terms of improving the state of the fetal complex, that is, the hormone-producing function of the placenta and blood flow in the fetal-placental complex, has been proven.

The use of micronized progesterone during pregnancy has been shown to help reduce complications during labor and postpartum.

The use of gestagens to treat the risk of preterm birth has been proven to have a positive effect on the condition of the fetus and newborn, in particular, a decrease in the incidence of fetal growth retardation syndrome (FGR) and malnutrition.

Indications and regimens for the use of micronized progesterone for the treatment of threatened preterm labor have been identified.

Conditions for defense

In case of risk of preterm birth, the use of micronized progesterone has a more positive effect on the hormonal function of the feto-uterine circulation than the use of hexoprenaline sulfate.

The use of micronized progesterone to treat the risk of preterm birth in the second trimester helps to significantly reduce pregnancy complications in the third trimester compared to the use of hexoprenaline sulfate.

The use of micronized progesterone for the treatment of preterm birth risk helps reduce complications during labor and the postpartum period, as well as adjustment disorders in newborns, compared with the use of hexoprenaline sulfate.

The author's personal contribution to the work

We independently studied and analyzed 144 birth histories of women in the period from 22 to 28 weeks, of which 49 were born with preterm birth and 95 with the threat of preterm birth. Clinical observations and a comprehensive examination of pregnant women were carried out: medical history, analysis of laboratory data, ultrasound with Doppler measurements, assessment of volumetric placental blood flow were performed by the author personally in more than 50% of patients. . A comparative description of the third trimester of pregnancy, childbirth and the postpartum period, as well as an analysis of the condition of newborns and children in the first three months of life after various methods of treatment of the threat of preterm birth in the second trimester.

Conclusion. Intensive dynamic monitoring of pregnant women, early diagnosis using high-precision test systems, timely restoration of vaginal normocenosis, prevention of fetal distress syndrome in groups of women with a high risk of preterm birth allow optimizing pregnancy management tactics and timely use of a complex of developed therapeutic measures to reduce the incidence of preterm birth.

Thus, it is clear from the information provided that

Intensive dynamic monitoring of pregnant women, early diagnosis using highly specific test systems, timely restoration of vaginal normocenosis, prevention of fetal respiratory distress syndrome in groups of women with a high risk of premature birth. birth, made it possible to optimize pregnancy management tactics and apply a set of therapeutic measures designed to reduce the incidence of premature birth.

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