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## CHARACTERISTICS OF THE COURSE OF THE GESTATION PERIOD, CHILDBIRTH AND NEWBORN CONDITION IN PATIENTS AT THREAT OF PREGNANCY TERMINATION IN EARLY TERMS

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### Summary

**Introduction.** Despite the successes of modern obstetrics and perinatology, stillbirth occupies one of the leading places in the structure of perinatal morbidity and mortality. Today, every 5-6 women lose a pregnancy, and the majority of spontaneous miscarriages occur in the 1st trimester of pregnancy.

**The aim of the study** is to examine the peculiarities of the course of the gestation period, childbirth and the condition of newborns in patients with a threat of early termination of pregnancy.

**Materials and methods.** We carried out a retrospective analysis of 100 individual charts of pregnant and parturient women with a threat of abortion in the 1st trimester of pregnancy (the main group). In 40 patients (subgroup I), the threat of termination of pregnancy was accompanied by bleeding, in 60 – the threat of termination without bleeding was diagnosed (subgroup II).

The control group consisted of 50 pregnant women with the physiological course of the first trimester of pregnancy. Statistical analysis was performed according to generally accepted methods of variational statistics. Reliability was assessed by Student's t-test. Differences were considered significant at a significance level of  $p \leq 0.05$ .

The conduct of research was approved by the Ethics Committee of the BSMU, which is confirmed by the protocol of the Commission on Biomedical Ethics regarding the observance of moral and legal rules for conducting medical scientific research. Processing of personal data was carried out after receiving the patient's informed consent.

**Results and their discussion.** The research groups were representative in terms of residence, social status, and education. Menstrual and reproductive anamnesis data in the main and control groups also did not differ significantly. The rate of spontaneous abortions and terminations of pregnancy according to medical indications was significantly higher in women with threatened termination of pregnancy both with and without bleeding compared to controls. Patients of the main group had a significantly higher history of both gynecological diseases and extragenital pathology.

Pregnant women with retrochorial hematoma and bleeding accounted for 70%, in 30% of women in the 1st trimester of pregnancy, in the presence of bloody secretions, retrochorial hematoma was not diagnosed. The percentage of asymptomatic retrochorial hematomas was 15%. Anomalous location of the chorion in the 1st trimester of pregnancy was diagnosed much more often in the 1st and 2nd subgroups.

The analysis of the further course of pregnancy in women with episodes of miscarriage in the early stages of gestation showed that in the main group the level of perinatal complications, such as the threat of premature birth (30%), placental dysfunction (38%), preeclampsia (11%), fetal distress (20%), SZRP (19%) was significantly higher. Accordingly, the rates of premature birth (13%), fetal distress (25%), and labor anomalies (10%) were higher in childbirth.

When analyzing the condition of children at birth, the level of moderate asphyxia in the main group was higher than in the control group ( $8 \pm 2.7\%$  and  $0\%$ , respectively). The average weight of full-term newborns in the study group was significantly lower ( $3020.0 \pm 21.4$ ) than that of children in the control group ( $3685.0 \pm 28.1$  g) ( $p < 0.05$ ).

### Conclusions.

Pregnant women with a threat of miscarriage in the first trimester of pregnancy are a high-risk group for the occurrence of perinatal complications.

The level of complications in the II and III trimesters of pregnancy is significantly higher if the threat of early termination of pregnancy was accompanied by bleeding.

In pregnant women with bleeding earlier (up to 8 weeks), compared to patients with bleeding at 9-13 weeks, the frequency of threatened miscarriage in the II trimester of pregnancy, premature birth, placental dysfunction, preeclampsia, and SZRP was significantly higher.

**Keywords:** threat of abortion in the first trimester of pregnancy; gestational period; childbirth; condition of newborns.

### Introduction

Despite the advances of modern obstetrics and perinatology, miscarriage is one of the leading causes of perinatal morbidity and mortality. Today, one in 5-6 women loses a pregnancy, with the vast majority of spontaneous miscarriages occurring in the first trimester of gestation [1, 2, 3, 4, 5, 6]. The results of fundamental research in recent years have shown that the formation of gestational complications occurs early, when the adverse conditions of the woman's body, endo- and myometrium, cause incomplete formation of the embryo, foetus and extrauterine structures [7, 8, 9, 10, 11, 12].

Increased uterine tone, chorionic detachment, and the appearance of bloody discharge are early clinical signs of pregnancy miscarriage, which can be caused by numerous factors, ranging from genetic,

endocrine, infectious, immune and haemostatic factors [13, 14, 15, 18, 18].

**The aim of the study** is to examine the peculiarities of the course of the gestation period, childbirth and the condition of newborns in patients with a threat of early termination of pregnancy.

### Materials and Methods

We retrospectively reviewed 100 case notes of pregnant and postpartum women with a threatened termination of pregnancy in the first trimester (study group). Threatened pregnancies were accompanied by bleeding in 40 patients (I subgroup) and were diagnosed in 60 patients without bleeding (II subgroup). A control group consisted of 50 pregnant women with a physiological course of the first

trimester of gestation.

Statistical analysis was performed using conventional methods of variance statistics. Significance was assessed by Student's t-test. Differences were considered significant at significance level  $p \leq 0.05$ .

The research was approved by the Ethical Committee of the BSMU, as confirmed by the protocol of the Biomedical Ethics Commission on the observance of moral and legal rules of medical scientific research. The processing of personal data was carried out after obtaining the informed consent of the patient.

### Results and discussion

The mean age of the pregnant women studied was  $28.8 \pm 0.8$  in the study and  $29.4 \pm 0.7$  in the control group. The study groups were also representative of housing, social status and education.

When analyzing the menstrual history data, we found that the onset of menarche in all the patients mainly fell at the age of 11-16 years. The duration of menstruation did not differ significantly between the groups ( $p > 0.05$ ) and averaged from 4 to 8 days. The menstrual cycle duration of 24-38 days prevailed in the examined women, both in the main and control groups, and was practically the same. However, menstrual cycle of more than 38 days and less than 24 days was observed only in the study group (4% and 2% respectively). Menstrual cycle was established immediately in the majority of patients

in both groups, and only in 5 (5%) women of the main group menstruation became regular after 1.5 years. Menstrual discharge was also moderate in the majority of subjects, while in 4 (10%) women of the study group menstrual discharge was scarce.

When the reproductive history was analyzed, it was determined that pregnancy was the first in almost every 3 patients with threatened abortion with bleeding in the first trimester of gestation and in every 2 patients in both the control and those with threatened abortion without bleeding. The proportion of repeat pregnancies in all the observation groups was 62.5% in the I subgroup, 51.7% in the II subgroup, and 58% in the control group, respectively. The number of first-time mothers in subgroup I was 65.0%, in subgroup II 53.3%, and in the control group 50%. There was no statistically significant difference in the values of comparative characteristics of birth parity between the main and control groups ( $p > 0.05$ ).

It should be noted that the rate of spontaneous abortions in women with threatening abortion with bleeding in the first trimester was  $22.5 \pm 6.6\%$ , in women with threatening abortion without bleeding -  $15.0 \pm 4.6\%$ , while in patients with a physiological course of the first trimester only  $6.0 \pm 3.4\%$  ( $p < 0.05$ ). The same trends were seen in the rate of pregnancy termination for medical reasons: in the study group, it was  $8.0 \pm 2.7\%$ , and in the control group,  $2.0 \pm 2.0\%$ . According to medical records, there was one case of ectopic pregnancy in all study groups.

Table 1

#### Peculiarities of the first trimester of gestation in pregnant women with threatened abortion

Pregnancy pathology	Study group (n=100)								Control group (n=50)	
	I subgroup (n=40)				II subgroup (n=60)					
	Abs.	M%±m%	Abs.	M%±m%	Abs.	M%±m%	Abs.	M%±m%		
	Up to 8 weeks' gestation (n=15)		9-13 weeks' gestation (n=25)		9-13 weeks' gestation (n=25)		9-13 weeks' gestation (n=46)			
Retrochorial hematoma with bleeding	11	27,5*±7,1	17	42,5*±7,8	0	0	0	0	0	0
Bleeding without retrochorial hematoma	4	10,0*±4,7	8	20,0*±6,3	0	0	0	0	0	0
Retrochorial hematoma without bleeding	0	0	0	0	1	1,7±1,7	8	13,3*±4,4	0	0
Abnormal chorion position	12	30,0*±7,2	18	45,0*±7,9	3	5,0*±2,8	12	20,0*±5,2	8	16,0 ± 5,2
Vomiting of pregnant	6	15,0*±5,6	3	7,5±4,2	0	0	1	1,7±1,7	0	0

\* -  $p < 0.05$ , statistically significant difference in the values of comparative indices between the main observation group and the control group

The data on the gynecological history showed that gynecological diseases occurred more frequently in the female respondents with threatened abortion than in those in the control group ( $87.0 \pm 3.4\%$  versus  $42.0 \pm 7.0\%$ ) ( $p < 0.05$ ). The data obtained by retrospective analysis of obstetric history suggests that benign and precancerous neoplasms of the female genitalia ( $49.0 \pm 5.0\%$ ), abnormal uterine

bleeding ( $6.0 \pm 2.4\%$ ), and pelvic inflammatory disease ( $30.0 \pm 4.6\%$ ) ( $p < 0.05$ ) were significantly more common in the study group.

Analysis of extragenital morbidity showed that somatic pathology was significantly more common ( $p < 0.05$ ) in patients with early termination of pregnancy. The vast majority of women in the study group had cardiovascular disease ( $87.0 \pm 3.4\%$ ).

There were also significantly more frequent in those examined with threatened abortion both with and without bleeding circulatory disorders ( $55.0 \pm 10.6\%$  and  $37.7 \pm 10.3\%$ ; control -  $14.0 \pm 13.1\%$ ), respiratory diseases ( $17.5 \pm 6.0\%$  and  $21.7 \pm 5.3\%$ ; in control -  $0\%$ ), endocrine pathology ( $35.0 \pm 7.5\%$  and  $40.0 \pm 6.3\%$ ; in control -  $12.0 \pm 4.6\%$ ), diseases of urogenital system ( $65.0 \pm 7.5\%$  and  $46.7 \pm 6.4\%$ ; in control -  $8.0 \pm 3.8\%$ ) ( $p < 0.05$ ). The control group was dominated by cardiovascular diseases (32%), blood diseases (14%) and gastrointestinal diseases (12%), but these rates were incomparably lower than in the pregnant women in the study group.

Analyzing the course of the first trimester in pregnant women in the main group (Table 1) we found that 15 (37.5%) patients experienced hemorrhage before 8 weeks of gestation, and 25 (62.5%) had a bleeding disorder at 9-13 weeks. Risk of miscarriage without bleeding before 8 weeks of gestation has been observed in 14 (23.3%) women,

at 9-13 weeks - in 46 (76.6%) patients. It should be noted that retrochorial hematoma up to 8 weeks was seen in  $27.5 \pm 7.1\%$  of cases in the first subgroup and in  $42.5 \pm 7.8\%$  at 9-13 weeks. In the same subgroup, hemorrhage without retrochorial hematoma occurred 2-fold more frequently at 9-13 weeks of gestation. In the group of patients with threatened abortion without bleeding, asymptomatic retrochorial hematoma at up to 8 weeks' gestation was diagnosed in 1 (1.7%) case, at 9-13 weeks' gestation - in 8 (13.3%) examined patients.

Abnormal chorion position was diagnosed significantly more frequently in patients with threatened abortion, both with and without bleeding (75% and 25%) than in controls. It should also be emphasized that gestoses in the first half of pregnancy occurred more frequently ( $p < 0.05$ ) in women with threatened abortion with bleeding before 8 weeks of gestation, compared to those in subgroup II and the control group (15%, 1.7%, and 0%, respectively).

Table 2.

Frequency of complications in the II-III trimester of gestation in pregnant women with a threat of early termination

Pregnancy pathology	Study group (n=100)								Control group (n=50)	
	I subgroup (n=40)				II subgroup (n=60)					
	Up to 8 weeks' gestation (n=15)		9-13 weeks' gestation (n=25)		Up to 8 weeks' gestation (n=14)		9-13 weeks' gestation (n=46)			
	ABS.	M%±M%	ABS.	M%±M%	ABS.	M%±M%	ABS.	M%±M%		
Threat of pregnancy termination up to 22 weeks	8	20,0*±6,3	5	12,5*±5,2	2	3,3±2,3	11	18,3*±5,0	0	0
Threat of premature birth	11	27,5*±7,1	16	40,0*±7,7	1	1,7±1,7	2	3,3±2,3	3	6,0±3,4
CI	3	7,5±4,2	4	10,0*±4,7	1	1,7±1,7	5	8,3*±3,6	0	0
Premature detachment of a normally located placenta	2	5,0±3,4	0	0	0	0	1	1,7±1,7	0	0
Big foetus	0	0	0	0	2	3,3±2,3	0	0	6	12,0±4,6
Foetus small for gestational age	8	20,0*±6,3	1	2,5±2,5	1	1,7±1,7	8	13,3*±4,4	1	2,0±2,0
FGR	7	17,5*±6,0	4	10,0*±4,7	0	0	8	13,3*±4,4	0	0
Placental dysfunction	14	35,0*±7,5	9	22,5*±6,6	8	13,3*±4,4	7	11,7*±4,1	1	2,0±2,0
Oligohydramnios	0	0	2	5,0±3,4	0	0	3	5,0±2,8	0	0
Polyhydramnios	2	5,0±3,4	0	0	0	0	2	3,3±2,3	1	2,0±2,0
Preeclampsia	5	12,5±5,2	4	10,0±4,7	0	0	2	3,3±2,3	1	2,0±2,0
Fetal distress during pregnancy	8	20,0*±6,3	5	12,5±5,2	4	6,7±3,2	3	5,0±2,8	0	0

\* -  $p < 0.05$ , statistically significant difference in the values of comparative indices between the main observation group and the control group

The analysis of the further course of pregnancy in women with episodes of miscarriage in early gestation (Table 2) showed that the threat of miscarriage in the second trimester and the threat of preterm birth were more common in patients who had clinical signs of abortion with bleeding before 8 weeks of gestation (respectively  $20.0 \pm 6.3\%$  and  $0\%$ ;  $27.5 \pm 7.1\%$  and  $6.0 \pm 3.4\%$ ) ( $p < 0.05$ ). The same trends in comparison with controls were observed in women with episodes

of miscarriage at 9-13 weeks ( $12.5 \pm 5.2\%$  and  $0\%$ ;  $40 \pm 7.7\%$  and  $6.0 \pm 3.4\%$ ) ( $p < 0.05$ ). It should also be noted that the rate of threat of preterm birth in the first subgroup was significantly higher than in the second subgroup ( $67.5 \pm 7.4\%$  and  $5.0 \pm 2.8\%$ ) ( $p < 0.05$ ). The rate of cervical insufficiency (CI) was significantly higher in the pregnant women of the I subgroup than in the control group ( $17.5 \pm 6.0\%$  and  $0\%$ , respectively). The rate of placental dysfunction diagnosed in the second and

third trimesters of gestation also differed significantly from that in controls (I subgroup,  $57.5 \pm 7.8\%$  and controls,  $2.0 \pm 2.0\%$  ( $p < 0.05$ ); II subgroup,  $25.0 \pm 5.6\%$  and controls,  $2.0 \pm 2.0\%$  ( $p < 0.05$ )). Pregnant women with early gestational episodes of miscarriage were also more likely to have a verified delayed fetal development syndrome and to have a foetus small for gestational age ( $p < 0.05$ ). The rate of preeclampsia was 5-fold higher in pregnant women in subgroup I compared to women with early termination without bleeding (subgroup II) ( $22.5 \pm 6.6\%$  and  $3.3 \pm 2.3\%$ , respectively) ( $p < 0.05$ ). There was also a significant difference between the rates in subgroup I and the control group ( $22.5 \pm 6.6\%$  and  $2.0 \pm 2.0\%$ , respectively) ( $p < 0.05$ ). Fetal distress during pregnancy was 20% in the study group, whereas this pathology was absent in the control women.

Analysis of the incidence of childbirth

complications (Table 3) showed that the rate of premature births in patients in subgroup I was 3-fold higher than in subgroup II and differed significantly from controls ( $22.5 \pm 6.6\%$ ;  $6, 7 \pm 3.2\%$  and  $2.0 \pm 2.0\%$ , respectively). The frequency of abnormal deliveries in subgroups I and II was about the same, but significantly higher than that in the control group. Fetal distress in childbirth in pregnant women in subgroups I and II was also significantly more frequent than in the comparison group. Analyzing the rates of uterine scar failure, premature rupture of membranes, and maternal traumatism in childbirth, no significant difference was found between the rates in the compared groups. As for the incidence of obstetric anomalies, the rate in the main group was significantly higher than that in the control group ( $10 \pm 3.0\%$  and  $2.0 \pm 2.0\%$ , respectively) ( $p < 0.05$ ).

Table 3

**Characteristics of the course of childbirth in patients with threatened abortion in the first trimester of gestation**

Indices	Study group (n=100)					
	I підгрупа (n=40)				II підгрупа (n=60)	
	ABS.	M%±M%	ABS.	M%±M%	ABS.	M%±M%
Preterm childbirth	9	22,5*±6,6	4	6,7±3,2	1	2,0±2,0
On-time delivery	31	77,5*±6,6	56	93,3±3,2	49	98,0±2,0
Physiological childbirth	26	72,5*±7,1	42	70,0*±5,9	44	88,0±4,6
Pathological delivery	14	35,0*±7,5	18	30,0*±5,9	6	12,0±4,6
Fetal distress in childbirth	11	27,5*±7,1	14	23,3*±5,5	2	4,0±2,8
Uterine scar failure	1	2,5±2,5	3	5,0±2,8	1	2,0±2,0
Premature detachment of a normally located placenta. Metrorrhagia	1	2,5±2,5	0	0	0	0
Placental presentation	1	2,5±2,5	0	0	1	2,0±2,0
Breach position	0	0	0	0	1	2,0±2,0
Premature rupture of membranes 23,9	9	22,5±6,6	10	16,7±4,8	4	8,0±3,8
Delivery abnormalities	6	15,0*±5,6	4	6,7±3,2	1	2,0±2,0
Delivery traumatism	5	12,5±5,2	13	21,7±5,3	5	10,0±4,2
Tight placental attachment	1	2,5±2,5	0	0	0	0

\* -  $p < 0.05$ , statistically significant difference in the values of comparative indices between the main observation group and the control group

Newborns of all groups examined were assessed at birth on the Apgar scale. The vast majority of infants were born in a satisfactory status. Moderate asphyxia in subgroup I was found in  $15 \pm 5.6\%$  of cases, in subgroup II in  $3.3 \pm 2.3\%$ ; in the control group, all children were rated on the Apgar scale at 7-10 points. A significant difference of moderate asphyxia was observed only between the main and control groups,  $8.0 \pm 2.7\%$  and  $0\%$  ( $p < 0.05$ ). Analysing also the weight of full-term neonates, it should be noted that in the control group, it was significantly higher than that in pregnant women in the first trimester of gestation ( $3685.0 \pm 28.1$  g and  $3020.0 \pm 21.4$  ( $p < 0.05$ ), respectively).

### Conclusions

1. Threatened pregnancies in the first trimester of gestation are at high risk of perinatal complications.

2. The complication rate in the second and third trimesters of gestation is significantly higher if there is early pregnancy termination accompanied by haemorrhage.

3. Pregnant women with early haemorrhage (before 8 weeks) versus those who had haemorrhage between 9 and 13 weeks had significantly higher rates of threatened miscarriage in the second trimester, premature birth, placental dysfunction, preeclampsia, and FGR.

### Prospects for further research

A promising area for further research is to investigate the current aspects of prevention and prognosis of perinatal complications in pregnant women with early gestational episodes of miscarriage.

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**ОСОБЛИВОСТІ ПЕРЕБІГУ ГЕСТАЦІЙНОГО ПЕРІОДУ, ПОЛОГІВ ТА СТАНУ НОВОНАРОДЖЕНИХ У ПАЦІЄНТОК ІЗ ЗАГРОЗОЮ ПЕРЕРИВАННЯ ВАГІТНОСТІ В РАННІ ТЕРМІНИ***О.В. Кравченко, В.М. Соловей***Буковинський державний медичний університет МОЗ України  
(м. Чернівці, Україна)****Резюме**

**Вступ.** Незважаючи на успіхи сучасного акушерства та перинатології, невиношування займає одне з провідних місць в структурі перинатальної захворюваності та смертності. Сьогодні кожна 5-6 жінка втрачає вагітність, при чому переважна кількість самовільних викиднів припадає на I триместр гестації.

**Мета дослідження** – вивчити особливості перебігу гестаційного періоду, пологів та стану новонароджених у пацієнток із загрозою переривання вагітності в ранні терміни.

**Матеріали та методи.** Нами проведений ретроспективний аналіз 100 індивідуальних карт вагітної та породілі із загрозою переривання вагітності в I триместрі гестації (основна група). У 40 пацієнток (I підгрупа) загроза переривання вагітності супроводжувалася кровотечею, у 60 – була діагностована загроза переривання без кровотечі (II підгрупа). Контрольну групу склали 50 вагітних з фізіологічним перебігом I триместру гестації.

Статистичний аналіз виконували за загальноприйнятими методами варіаційної статистики. Достовірність оцінювали за t-критерієм Стьюдента. Відмінності визнавали істотними при рівні значущості  $p \leq 0,05$ .

Проведення досліджень погоджене Етичним комітетом БДМУ, що підтверджується протоколом Комісії з питань біомедичної етики щодо дотримання морально-правових правил проведення медичних наукових досліджень. Обробку персональних даних здійснювали після отримання інформованої згоди пацієнтки.

**Результати та їх обговорення.** Групи досліджених були репрезентативні за помешканням, соціальним статусом та освітою. Дані менструального та репродуктивного анамнезу в основній і в контрольній групі також достовірно не відрізнялися. Рівень самовільних абортів і переривань вагітності за медичними показами був достовірно вищим у жінок із загрозою переривання вагітності як з кровотечею, так і без у порівнянні з контролем. Пацієнтки основної групи в анамнезі мали достовірно вищу частоту як гінекологічних захворювань, так і екстрагенітальної патології.

Вагітні з ретрохоріальною гематомою і кровотечею склали 70%, у 30% жінок в I триместрі гестації при наявності кров'янистих виділень ретрохоріальна гематома не була діагностована. Відсоток безсимптомних ретрохоріальних гематом склав 15%. Аномальне розташування хоріону в I триместрі гестації значно частіше було діагностовано в I та II підгрупах.

Аналіз подальшого перебігу вагітності у жінок з епізодами невиношування в ранні терміни гестації показав, що в основній групі рівень перинатальних ускладнень, таких як загроза передчасних пологів (30%), плацентарна дисфункція (38%), пре-еклампсія (11%), дистрес плода (20%), синдром затримки розвитку плода (СЗРП) (19%) був достовірно вищим. Відповідно вищими в пологах були і показники передчасних пологів (13%), дистресу плода (25%), аномалій пологової діяльності (10%).

При аналізі стану дітей при народженні рівень помірної асфіксії в основній групі був вищим, ніж у контролі (відповідно  $8 \pm 2,7\%$  та  $0\%$ ). Середня маса доношених новонароджених у досліджуваній групі була достовірно меншою ( $3202,0 \pm 21,4$ ), ніж у дітей контрольної групи ( $3685,0 \pm 28,1$  г) ( $p < 0,05$ ).

**Висновки.** Вагітні із загрозою невиношування в I триместрі гестації складають групу високого ризику щодо виникнення перинатальних ускладнень. Рівень ускладнень у II та III триместрі гестації значно вищий, якщо загроза переривання вагітності в ранні терміни супроводжувалася кровотечею. У вагітних з кровотечею в більш ранні терміни (до 8 тижнів) порівняно з пацієнтками, у яких кровотеча виникла у 9-13 тижнів, достовірно вищою була частота загрози викидня у II триместрі гестації, передчасних пологів, плацентарної дисфункції, пре-еклампсії та СЗРП.

**Ключові слова:** загроза переривання вагітності в I триместрі гестації; гестаційний період; пологи; стан новонароджених.

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