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ASSESSMENT OF INTRAUTERINE FETAL CONDITION IN WOMEN WITH PROLONGED PREGNANCY

Abstract *The article presents the main indicators of diagnostics of intrauterine fetal condition in women with prolonged pregnancy. Cardiotocography diagnostics is one of the first links reflecting the intrauterine condition of the fetus that serves as a signal for further observation and management tactics of women in the period of gestation more than 40 weeks.*

More significant disturbances of the parameters diagnosed during recording cardiotocograms in women with prolonged pregnancy, namely, lower momentary oscillation amplitude (MOA) and the number of oscillations, reduced number of accelerations, simultaneous increase of variable, deep, long-term decelerations during pregnancy and occurrence of late decelerations in childbirth (dipII, dipIII), increased percentage of a stable rhythm with a considerable amount of monotony and sinus rhythm were indicative of disorders of the intrauterine fetal condition: hypoxia, fetal distress and disturbance of placental circulation in 87,6% of cases in women with prolonged pregnancy. It should be noted that according to the CTG, a satisfactory fetal condition was diagnosed in most women in the control group.
Key words: *fetus, women, deltoidea, prolonged pregnancy.*

Introduction. The issue of prolonged pregnancy and delayed labour so far presents a great scientific interest for obstetricians-gynecologists and perinatologists, since functional disorders of the placental complex are the main cause of gestational complications in case the term of gestation is more than 40 weeks. The importance and topicality of the issue is explained by a number of complications during pregnancy, labour and postnatal period. To diagnose disorders of the placental complex and intrauterine fetal condition there are numerous methods, however, one of the first and reliable one is cardiotocography.

Objective of the study is to diagnose peculiarities of cardiotocography indices in women with the signs of prolonged pregnancy and compare the results obtained with the indices of women before 40 weeks of gestation.

Materials and methods. To assess the results of

cardiotocographic findings we have divided pregnant women into 2 groups: the main group included 30 pregnant with prolonged pregnancy in the term of 41-42 weeks, and the control group included 20 healthy pregnant in the term of 37-40 weeks of gestation. To diagnose prolonged pregnancy the following data were considered: calculation of gestation period by menstrual cycle, ovulations, USD screening methods of examination, first fetal movements, beginning of the maternity leave. The complex of the examinations performed included: echography examination (fetometry, placentography, Doppler findings of circulation rate curves), cardiotocography, and amnioscopy. It should be noted that distribution of groups according to age was from 20 to 35 years including primiparas – 18(30%), secundiparas – 42(70%). The most frequent extragenital diseases in women of the main group were: anemia of I and II degree

12(40%), gastrointestinal diseases - 6(20%), urinary tract diseases -5 (16,6%), varicose dilation of veins of the lower limbs -8(26,7%), diseases of the thyroid gland - 4 (13,3%). Conducting retrospective analysis of medical documents it was found that in women of the main group the following gestational complications were registered: threat of miscarriage without blood smears - 16(53,3%), threat of miscarriage with blood smears at an early embryonic period with partial exfoliation of the chorion -8 (26,7%), early gestosis-9(30%), retarded fetal development syndrome (RFDS) of I and II degree - 7 (23,3%). To diagnose the intrauterine fetal condition all the pregnant women (the main and control groups) underwent cardiotocographic examination.

Results and discussion. Cardiotocographic (CTG) examination was conducted for all the women of the main and control groups. The following parameters were assessed according to CTG findings: basal heart rate (BHR), variability of HR (amplitude and oscillation rate), availability and type of temporary changes in BHR in the form of acceleration or deceleration of the heart rhythm. Changes of BHR among women of the main group (Table 1) into the side of tachycardia ($p>0,05$) were found to reach 175,8 beats per minute and more, although in 32,5% cases this index was on the rate of 110-170 beats per minute. Stable bradycardia was registered in 2 women (6,6%). Reactivity of the autonomous system of the fetus is added by the assessment of variability. Variability is indicative of deviations from the mean rate of the basal rhythm in the

form of oscillations. Variability of the basal rhythm was assessed by the amplitude and frequency. In women of the main group with the signs of functional disorders of the placental complex the momentary oscillation amplitude (MOA) decreased as compared to the normal one, and CTG usually possessed smooth, monotonous low amplitude and low frequency rhythm. MOA decreased to $4,2 \pm 0,2\text{mm}$ ($p<0,001$) in women with the signs of prolonged pregnancy, although in women from the control group this index was within the limits of $10,8 \pm 0,52\text{ mm}$. The frequency of oscillations in women from the main group was $3,1 \pm 0,12$ oscillations per minute, while in women from the control group this index was within the limits of $7,5 \pm 0,18$ oscillations per minute. Manifestation of the registered monotonous rhythm of the curve is indicative of hypoxic disorders of the fetus in women from the main group.

Accelerations are the index of stable functioning of the fetal condition found mostly in the control group. This number of accelerations in healthy women (in the term to 40 weeks of pregnancy) during 20 minutes of the examination was $6,9 \pm 0,24$, amplitude $-22,6 \pm 1,20$, duration - $14,6 \pm 0,57$ seconds. It should be noted that in women from the main group as compared to the control group the number of accelerations decreased and was $1,5 \pm 0,37$ ($p<0,001$). The amplitude was $15,6 \pm 1,5$ ($p<0,01$), and duration was $8,9 \pm 0,58$ seconds respectively ($p>0,05$).

A negative index reflecting pathological fetal condition in the form of pronounced hypoxia was

Table

Indices of cardiotocograms in examined pregnant women (M±m)

CTG indices	Groups of pregnant women	
	Main group (n =30)	Control group (n =20)
BHR, beats per minute	175,8±2,3	145,6±1,03
MOA, beats per minute	4,2±0,2	10,8±0,52
Oscillation rate per minute	3,1±0,12	7,5±0,18
Accelerations	Number	1,5±0,37
	Amplitude, beats per minute	15,9±1,5
	Duration, seconds	8,9±0,58
Decelerations	Number	4,6±0,29
	Amplitude, beats per minute	25,1±0,81
	Duration, seconds	3,62±0,41
Movements	3-6	5-10

found mainly in women of the main group. The number of decelerations in women of the main group was $4,6 \pm 0,29$ ($p < 0,001$), amplitude was $25,1 \pm 1,81$ ($p < 0,05$), duration $3,62 \pm 0,41$ seconds ($p < 0,001$). However, the number of decelerations in women from the control group was diagnosed to be inconsiderable: $1,3 \pm 0,2$, amplitude reached $1,54 \pm 1,32$, duration – $0,6 \pm 0,06$ seconds.

Estimating the data of CTG of women in birth it should be noted that late dip II, dip III decelerations were found in women of the main group which was indicative of fetal distress and indications for urgent delivery by means of cesarean section. Thus, in women from the main group the number of decelerations ranged between $4,6 - 5,7 \pm 0,12$; amplitude was within the range of 16-23 beats per minute – $19,6 \pm 0,41$ beats per minute, duration was 18-31 c – $24,2 \pm 0,77$ seconds. However, in women from the control group single, sporadic, short-term decelerations were found occurring in response to fetal movements. The number of decelerations was $1,3 - 2,1 \pm 0,08$, amplitude ranged within the limits from 16 to 19 beats per minute – $17,4 \pm 0,12$ beats per minute, and duration ranged within the range of 15-19 seconds and in an average it was $17,2 \pm 0,16$ seconds. At the beginning of labour activity in healthy women single, periodical (early) decelerations dip 0, dip I were found with duration no more than 15 seconds.

Estimating the motor activity of the fetus in women of the main and control groups on the moment of CTG registration (20 minutes) the number of fetal movements in women from the main group was diagnosed like 3-6, although in women from the control group the motor activity of the fetus was 5-10.

More considerable disorders of the parameters diagnosed during registration of cardiotocography in women of the main group including decreased MOA and number of oscillations, decreased number of accelerations, simultaneous increase of variable, deep, long-term decelerations during pregnancy and appearance of late decelerations during labour (dip II, dip III), increased percentage of a stable rhythm with considerable areas of monotonous and sinusoid rhythm, which was indicative of disorders in the intrauterine fetal condition: hypoxia, fetal distress and disorders of the placental circulation in 87,6% cases in women

with prolonged pregnancy. It should be noted that according to CTG findings a satisfactory fetal condition was diagnosed in the majority of women from the control group.

Conclusions. Therefore, the most informative indices reflecting intrauterine fetal condition according to CTG findings are: basal heart rate, amplitude, momentary oscillation amplitude, the number, amplitude, duration of accelerations and decelerations, and reactivity to stress test. CTG findings enable to make timely diagnostics, prevent threatening condition of the fetus (hypoxia, distress) during pregnancy, labour, and choose the right obstetrical tactics concerning management of a certain patient.

Prospects of further studies. Timely diagnostics of the placental complex and intrauterine fetal condition by means of instrumental methods of diagnostics.

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