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PECULIARITIES OF PREGNANCY DEVELOPMENT AND CONDITION OF FETUS IN PREGNANT WOMEN DIAGNOSED WITH POLYHYDRAMNIOS

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ОСОБЕННОСТИ ТЕЧЕНИЯ БЕРЕМЕННОСТИ И СОСТОЯНИЕ ПЛОДА У БЕРЕМЕННЫХ С МНОГОВОДИЕМ

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В статье представлены данные обследования практически здоровых беременных, а также беременных с многоводием, проведен анализ течения и осложнений беременности, родов и послеродового периода, а также состояния плода на основании данных биофизического профиля плода, кардиотокографического исследования, допплерометрических показателей кровотока в маточных артериях и в артерии пуповины. При многоводии, в сравнении с практически здоровыми беременными, чаще наблюдаются такие осложнения беременности, как легкая и средней степени тяжести преэклампсия, угроза прерывания беременности, анемия беременных, дисфункция плаценты. По данным кардиотокографии и биофизического профиля, отмечается нарушение состояния плода, возрастает сопротивление в сосудах фетоплацентарной системы.

Ключевые слова: многоводие у беременных, биофизический профиль плода, кардиотокографическое исследование, допплерометрические показатели кровотока.

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The article presents the data of the study of basically healthy pregnant women and pregnant women diagnosed with polyhydramnios. There was carried out the analysis of pregnancy development and complications, delivery and post-delivery period, as well as the condition of fetus on the basis of the data of the bio-physical profile of fetus, cardiotocographic study and dopplerometric indicators of the bloodstream in uterine arteries and arteries of the navel-cord.

Pregnant women with polyhydramnios, compared to healthy pregnant women, more often experience such complications in pregnancy as light and moderate degree of preeclampsia, threatened miscarriage, anemia of pregnancy, placenta dysfunction. In accordance with the data of cardiotocography and bio-physical profile, disorder in the condition of fetus is observed, and resistance in the vessels of feto-placental system enhances.

Key words: polyhydramnios in pregnancy, bio-physical profile of fetus, cardiotocographic study, dopplerometric indicators of bloodstream.

It is proved that pathology of the environment around the fetus of pregnant women is one of the most common, which is difficult to prevent, and this leads to the unpredictable complications.

We have not faced with such scientific works that would study this problem in such details and

In the structure of neonatal mortality infection pathology is significant (11 to 45% of cases), death birth reaches 16%. It has different etiology, which is early symptom of various pathological processes of the mother and fetus. In the opinion of many authors, polyhydramnios symptom is developing because of intra-

no specific markers that would determine presence of intrauterine infection of polyhydramnios and estimate fetal condition adequately. Defining separate acute phase protein does not give a definite answer because they do not have enough to specify sensitivity and the prognosis of intrauterine infection of the fetus.

have great importance. Detecting frequency, risk factors, espe-

cially during pregnancy, childbirth and the postpartum period, the state of the fetus and newborns with polyhydramnios of infectious origin have great practical interest. Nowadays increased frequency of polyhydramnios is associated with the increased infections among women of reproductive age, immunodeficiency, hormonal disorders. In clinical obstetrics anomalies of amniotic volume of fluid to the emergence lead to different obstetric complications, hypoxia, delayed growth of the fetus, placental insufficiency, premature birth, delayed discharge water distress of antenatal fetal deaths, postpartum hemorrhage [I. A. Botvineva, L. V. Renga, R. M. Zorina, L. Bazhenov, V. Zorin "Acute phase proteins in the predicting of the newborn during pregnancy complicated with polyhydramnios and at risk of intrauterine infection," 2012].

Pregnant women with polyhydramnios suffer from infectious pathology, there are existing inflammatory changes in defecation (100%), 71% — circulatory and 84% — degenerative diseases. Polyhydramnios of the infectional origin is formed in the background of significant changes in defecations and predicts the high risk of neonatal complications [S. N. Pashyna, N. V. Ordzhonikidze, L. P. Ponomarev "Perinatal infection and polyhydramnios", 2004].

In the diagnosis of intrauterine infection, there are certain difficulties due to severity of infectious lesions mismatch pregnant and prenatal "patient", the disease often occurs in subclinical form.

The results of the scientific work suggest that mixed-chlamydial infection, cytomegalovirus promotes polyhydramnios, as a result there are significant morphological changes from both components of membranes as well, particularly on the part of the placenta, leading to the formation of placenta insufficiency of function. Early prediction of intrauterine infection, especially when polyhydramnios infectious genesis, timely and pathogenesis adequate prevention and correction of disturbances in the mother-placenta-fetus system of pregnant women with infectious and inflammatory diseases will prevent the development of perinatal infection or reduce its frequency to improve the effects of pregnancy and childbirth for mother, fetus and newborn.

Despite the active study of the problem in the science of perinatal infections there are still many uncertainties. There are no universally accepted classifications of perinatal infections which remain difficulties in early diagnosis of infection affecting the fetus, not the dates and indications for specific therapy, especially in viral infections. Clarification of the pathogenesis polyhydramnios features the use of new technologies, development of modern methods of its diagnosis, prevention and treatment are relevant, as the frequency will reduce complexities obstetric and perinatal costs.

Ultrasound diagnosis of amniotic fluid is of great clinical significance in obstetric practice as it allows to clarify the number of amniotic fluid fetal and obstetric tactics supervision during dynamic changes [M. A. Cheneva, J. P. Tytchenko, S. N. Lysenko "Clinical significance of ultrasonic examination of amniotic fluid", 2013].

Taking into account the extremely high frequency and a variety of serious complications and consequences, polyhydramnios in pregnancy is an important and urgent problem in obstetrics. Previous studies on this topic are quite fragmented and focused mainly on the pathogenesis, diagnosis and treatment of disease, without revealing the molecular mechanisms of fetal distress. The relevance and practical importance of this work lies in the fact that here, in addition to generalization and systematization of previous data was conducted a detailed analysis of risk factors, prognosis complications are active prevention and also focuses on a comprehensive examination of the problem and the need for cooperation between different sectors of medicine for the prevention and treatment of this pathology, which is unquestionable indicator of the importance of research.

The aim of this study — to evaluate pregnancy, childbirth, postpartum of pregnant women with polyhydramnios, fetal condition, hemodynamics in the mother-placenta-fetus system, and the type of birth, birth complications range, condition of newborns, postpartum complications and neonatal morbidity.

Materials and Methods of Research

To achieve the objectives we have analyzed 30 stories of practically healthy pregnant women and 80 women with polyhydramnios admitted to hospital during 2014–2016 years in the gestation period of 30 to 40 weeks, respectively stories of newborns.

To assess the internal uterine fetal methods ultrasound scanning, cardiotocography were used, and determining fetal biophysical profile was conducted. Ultrasonography was performed using the apparatus "Siemens" (Germany). Electrocardiographic fetal assessment was performed for all women from 30 weeks of pregnancy, with the device "Sonicaid" with computer data processing (interpretation of the parameters were carried out on a scale Fisher W. M.). For a more complete definition of internal uterine and fetal we conducted determination of fetal biophysical profile using complex technique proposed by A. Vintzileos (1983) in modification of L. G. Sychynava and O. I. Shraer (1992). Monitoring of key indicators in uteroplacental circulation was carried out using ultrasound system "Radmir". Doppler mapping and impulse Dopplermetry of umbilical artery and uterine artery on the side of placentation were performed.

Statistical analysis of the results was performed with the help of standard techniques using the application package "MS Excel XP" and "Statistica SPSS 10.0 for Windows" (license number 305147890).

Results and Discussion

Analysis of complications of pregnancy showed that there often have been registered significantly threatened miscarriage, anemia in pregnancy, mild or moderate preeclampsia, placental dysfunction of pregnant women with polyhydramnios.

The study evaluated the intrauterine fetus in pregnant groups on the basis of electric cardio graphic study. In healthy pregnant the fetus was regarded as satisfactory, at that grade 8 points were observed in 26.7%, 9 points — 26.7%, and 10 points — to 46.6% of pregnant women. According to electric cardio graphics if there was polyhydramnios fetal deterioration was clearly expressed. Thus, 45.0% of pregnant women were estimated at 7 points, 20.0% — 6 points, 25.0% — 5 points, and 10.0% — 4 points.

Comparing the average score by the Fischer scale (1976) it has been shown that electric cardio graphic rate of pregnant women with polyhydramnios was significantly lower than of healthy pregnant women: its fall is 34.8%, relative to healthy women.

Research of fetal biophysical profile showed that indicator of control group of pregnant women by A. M. Vintzileos scale (1983) is following: 13.3% of cases — 12 points, from 20.0% — 11 points to 40.0% — 10 points and in 26.7% of pregnant women — 9 points. In 50.0% of women with polyhydramnios figure was 7.8 points, to 15.0% — 6 points, to 35.0% — 4.5 points.

Comparing the average score by the Vintzileos scale it was found that pregnant women with gestational pyelonephritis have 31.0%, it is lower ($p<0.05$) compared with practically healthy pregnant. At the same time, the figure of polyhydramnios fetal biophysical profile was significantly lower, its reduction is 38.7% as compared to healthy women.

Women with polyhydramnios have marked changes of placental hemodynamics. In particular, the increase in systolic diastolic ratio, resistance index and pulse index is respectively 33.0%, 47.7%, 38.2%, compared with the control group (Table. 1).

Hemodynamic changes in the arteries of the umbilical cord are greatly exacerbated in the group of pregnant women with polyhydramnios. Under these conditions, an increase in systolic diastolic ratio, resistance index and pulse index respectively is 28.5; 41.9 and 41.0% compared to controls (Table 2).

Analysis of the time of regular labor, which led to the birth, showed that all healthy pregnant birth date was 39–40 weeks, whereas among women with polyhydramnios premature births were recorded in 60.0% of women. At the same time, premature births in the period 35–38 weeks occurred in 25.0% of women with polyhydramnios, and the term — 30–34 weeks — in 15.0% of pregnant women with the given pathology.

It was found that birth activity of all healthy women was held through the birth canal in the period 39–40 weeks. Instead, for 55.0% of women with polyhydramnios cesarean section was performed.

According to the table 3, in the structure of obstetric complications, we have observed that in 40.0% of women with polyhydramnios births were complicated by premature discharge of amniotic unlike the group of healthy pregnant women, where the figure was 3.33%. Labor and delivery anomalies of pregnant women with polyhydramnios were recorded in 30.0% of cases and of healthy pregnant women — at 3.33%. Fetal distress occurred in 55.0% of cases in the group of women with polyhydramnios, while in the control group it was only 13.3 % of cases. 20.0% of pregnant women with this pathology had blood loss more than physiological during childbirth, while among the control group such blood loss was not observed.

Describing newborns (data in table. 4), born as a result of pre-

Table 1

Dopplerometry Indicators of Blood Flow in the Uterine Arteries of Pregnant Women

Parameter	Groups of the pregnants	
	Healthy pregnants, n=30	Polyhydramnios, n=80
Systolic diastolic ratio	1.82±0.03	2.42±0.07*
Resistance index	0.65±0.02	0.96±0.01*
Pulse index	0.76±0.02	1.05±0.03*

Notes. In table 1–6: * — $p<0.05$ relative to healthy pregnant women.

Table 2

Dopplerometry Indicators of Blood Flow in the Umbilical Artery of the Examined Pregnant Women, M±m

Parameter	Groups of the pregnants	
	Healthy pregnants, n=30	Polyhydramnios, n=80
Systolic diastolic ratio	3.12±0.05	4.01±0.07*
Resistance index	0.62±0.01	0.88±0.03*
Pulse index	0.83±0.02	1.17±0.05*

Notes. In table 1–6: * — $p<0.05$ relative to healthy pregnant women.

mature birth and birth in the period 39–40 weeks of pregnant women in both groups it was found that the average weight of full-term children born from women with polyhydramnios was significantly lower up to 18.5%, compared with the newborns of healthy women. In assessing the condition of newborns by Apgar scale we obtained the following data: the average score of newborns of women with polyhydramnios was relatively smaller than group of healthy pregnant women ($p<0.05$) up to 17.1%.

Analyzing complications of newborns, it was found that among healthy pregnant women it was observed only mild asphyxia in 3.33% of cases. At the same time babies of women with polyhydramnios had a significant increase in the frequency of mild (at 32.5%) and moderate asphyxia (in 22.5% of cases).

In addition, the postpartum course of the women of studied groups was evaluated. Assessing the progress of women in the postpartum period of studied groups it turned out (Table. 5), in pregnant women with polyhydramnios subinvolution of the uterus was observed 6.8 times more often ($p<0.05$) lactostasis — 2.6 times more often ($p>0.05$) subfebrility — in 4.75 times, and lohiometra — 7.5 times ($p<0.05$) than healthy.

We followed the course of the early neonatal period of newborns of women of studied groups. The data is presented in Table. 6.

From the structure of neonatal morbidity syndrome of growth retardation often occurred, which was met in 30.0 % of women with polyhydramnios. It was found that infants of women with polyhydramnios had primary atelectasis significantly more common. There is noted tendency to increase the frequency of Perinatal CNS lesions, conjugation jaundice and hemolytic disease of the newborn, compared with the control group.

Thus, when polyhydramnios occures, complications of pregnancy are significantly more frequently observed such as mild and moderate preeclampsia, threatened miscarriage, anemia in pregnancy, placental dysfunction, compared to practically healthy pregnant. In addition, the violations of the fetus are observed (according to cardiotocography and biophysical profile) and there is increased resistance in the placental vascular system.

Proportion of preterm labor with the implementation of cesarean section of pregnant women with this pathology is increasing, there are more common complications such labor as premature discharge of amniotic, fetal distress, abnormal labor, blood loss greater than physiological), postpartum, namely sub involution of the uterus subfebrility, lokhiometra. At the same time the share of preterm infants, weight of newborns is significantly reduced, mild and moderate asphyxia occurs frequently, neonatal morbidity is increased (pri-

Table 3

Structure of Complications During Childbirth of the Examined Women, abs. (%)

Birth complications	Practically healthy pregnant women, n=30	Polyhydramnios, n=80
Premature discharge of amniotic fluid	1 (3.33)	32 (40.0*)
Fetal distress	4 (13.3)	44 (55.0*)
The anomalies of labor activity	1 (3.33)	24 (30.0*)
Blood loss during labor is greater than the physiological	—	16 (20.0*)

Notes. * — $p<0.05$ relative to healthy pregnant women.

Table 4

Condition of Newborns of Women of Examined Groups

Indicators of the newborns	Practically healthy pregnant women, n=30	Polyhydramnios, n=80
The frequency of preterm birth, абс. %	—	24 (40.0 %)
Weight of full-term newborns, g	3520±110	2870±105*
Weight of the premature newborns, g	—	2014±104
Apgar scale scores, a score	8.37±0.13	6.93±0.20*
Mild frequency of asphyxia, %	3.33	32.5*
Moderate frequency of asphyxia, %	—	22.5*
Severe frequency of asphyxia, %	—	—
Perinatal mortality, cases	—	—

Notes. * — $p<0.05$ relative to healthy pregnant women; # 2 — $p<0.05$ relative terms of pregnant women with gestational pyelonephritis.

Table 5

Structure of postpartum complications of women of studied groups, abs. (%)

The course of postpartum	Practically healthy pregnant women, n=30	Polyhydramnios, n=80
Subinvolution of the uterus	1 (3.33)	16 (20.0*)
Lactostasis	2 (6.67)	12 (15.0)
Subfibrylitet (t° rise up to 38.5°)	3 (10.0)	36 (45.0*)
Lochiometra (complication)	2 (6.67)	40 (50.0*)

Note. * — $p<0.05$ relative to healthy pregnant women.

Neonatal Morbidity Structure of Women of Studied Groups, abs. (%)

Disease of the newborns	Practically healthy pregnant women, n=30	Polyhydramnios, n=80
Primary atelectasis of lungs	—	16 (20.0*)
Perinatal CNS lesions	—	8 (10.0)
Syndrome of growth retardation	—	24 (30.0*)
Hemolytic disease	1 (3.33)	8 (10.0)
Conjugation jaundice	1 (3.33)	8 (10.0)

Note. * — p<0.05 relative to healthy pregnant women.

mary atelectasis syndrome and syndrome of growth retardation).

Conclusions

Polyhydramnios is accompanied with a large number of complications of pregnancy (mild and moderate preeclampsia — 35.0%, the threat of termination of pregnancy — 45.0%, anemia of pregnant women — 72.0 %, placental dysfunction — 55.0%), birth activity (premature discharge of amniotic water — 40.0%, fetal distress — 55.0%, anomalies of labor activity — 30.0% more than the physiological blood loss — 20.0%), postpartum (subinvolution of the uterus — 20.0% subfebrility — 45.0% lokhiometra — 50.0%, respectively) and the condition of the newborn (the proportion of premature significantly increases, birth weight reduces, mild and moderate asphyxia occurs frequently).

Women with polyhydramnios have a significant increase (18.5% compared to the practically healthy pregnant) of indicators of vascular resistance in the uterine and umbilical artery disorders accompanied with the development of the fetus abuse (average scores on scales Fischer and Vintzileos by 31.0% are less than of healthy pregnant women).

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СИНДРОМ ПЕРЕВАНТАЖЕННЯ ЗАЛІЗОМ І ПОРУШЕННЯ ВУГЛЕВОДНОГО ОБМІНУ У ХВОРИХ НА ХРОНІЧНИЙ ГЕПАТИТ С

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СИНДРОМ ПЕРЕГРУЗКИ ЖЕЛЕЗОМ И НАРУШЕНИЕ УГЛЕВОДНОГО ОБМЕНА У БОЛЬНЫХ ХРОНИЧЕСКИМ ГЕПАТИТОМ С

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В работе представлены результаты обследования 400 больных хроническим гепатитом С. При анализе полученных результатов установлено, что у больных хроническим гепатитом С с синдромом перегрузки железом уровни вирусной нагрузки (RNA HCV) достоверно выше ($p<0,05$), чем у больных с нормальным содержанием железа. Отмечено, что нарушение углеводного обмена чаще регистрируется у больных хроническим гепатитом С с синдромом перегрузки железом, чем у больных без нарушений феррокинетики (31,3 и 3,8 % соответственно; $p=0,03$). У больных хроническим гепатиом С с повышенным содержанием сывороточного железа и ферритина и нормальной массой тела выявлены достоверно высокие уровни С-пептида.

Ключевые слова: гепатит С, железо, ферритин, углеводный обмен.

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IRON OVERLOAD SYNDROME AND CARBOHYDRATE METABOLISM IN PATIENTS WITH CHRONIC HEPATITIS C

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Introduction. 20–60 % of patients with chronic hepatitis C have an iron overload syndrome.

The purpose of the work. Determine the diagnostic values of ironkinetics in carbohydrate metabolism in patients with CHC.

Materials and methods. The study included 400 patients with CHC aged 18 to 70 years (in average — 54.1±1.1 years): 247 (61.7%) women and 153 (38.3 %) men. The levels of C-peptide, blood glucose, serum iron and ferritin were determined by ELISA method. Two groups of patients were formed: the first — 183 patients with normal levels of iron and ferritin and the second — 217 patients with chronic hepatitis C with elevated levels of iron and ferritin. The groups were representative by gender, age and duration of CHC.