



## MORPHOLOGY OF PLACENTA AT PLACENTARY INSUFFICIENCY IN WOMEN WITH INTRA AMNIOTIC INFECTION

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✓ **Resume**

*The aim of the study was to study the morphology of 102 postpartum women who were diagnosed with placental dysfunction during pregnancy. The medical history of the patients, the course of pregnancy, childbirth, postpartum, morphological changes in the placenta were analyzed. It was found that with a combination of histological signs of placental dysfunction and inflammatory changes in the placenta, a complicated course of pregnancy and childbirth is observed. Material and methods: A morphological study of the placenta was carried out in 102 maternity women who were diagnosed with placental dysphenia during pregnancy. Results: A comparison of the data on the course of pregnancy and childbirth, depending on the structural changes in the placenta, allowed us to find out the difference in the occurrence of placental insufficiency in the first and second groups. Conclusion: The main etiopathogenetic sign of placental dysfunction in pregnant women of the first group was an infectious lesion of placental tissue and fetal membranes. It is necessary to include mandatory examination of pregnant women when taking on dispensary registration for the presence of violations of vaginal microcenosis and infection.*

**Key words:** *placental dysfunction, intra amniotic infection, ultrasound diagnosis, placental insufficiency.*

## МОРФОЛОГИЯ ПЛАЦЕНТЫ ПРИ ПЛАЦЕНТАРНОЙ НЕДОСТАТОЧНОСТИ У ЖЕНЩИН С ИНТРААМНИАЛЬНОЙ ИНФЕКЦИЕЙ

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✓ **Резюме**

*Целью исследования было изучение морфология 102 последов родильниц, у которых во время беременности была диагностирована плацентарная дисфункция. Проанализированы история болезни пациенток, течения беременности, родов, послеродового, морфологические изменения в последах. Установлено, что при сочетании гистологических признаков плацентарной дисфункции и воспалительных изменений в последе наблюдается осложненное течение беременности и родов.*

**Материал и методы:** *Проведено морфологическое исследование последов у 102 родильниц, у которых во время беременности была диагностирована плацентарная дисфункция.*

**Результаты:** *Сопоставление данных течения беременности и родов в зависимости от структурных изменений в последах позволило выяснить разница возникновения плацентарной недостаточности в первой и во второй группе.*

**Заключение:** *Основным этиопатогенетическим признаком возникновения плацентарной дисфункции у беременных первой группы было инфекционное поражение ткани плаценты и плодных оболочек. Необходимо включить обязательное обследование беременных женщин при взятии на диспансерный учет на наличие нарушений микроценоза влагалища и инфекции.*

**Ключевые слова:** *Плацентарная дисфункция, интраамниальная инфекция, ультразвуковая диагностика, плацентарная недостаточность.*

# INTRAAMNIAL INFECTSIYASI BO'LGAN AYOLLARDA PLATSENTAR YETISHMOVCHILIGIDA YO'LDOSH MORFOLOGIYASI

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## ✓ Rezyume

*Tadqiqotning maqsadi platsenta disfunktsiyasi tashxisi qo'yilgan 102 ta ayolni yo'ldoshini o'rganish bo'lib uni morfologik belgilarini aniqlash. Bemorlarning kasallik tarixi, homiladorlik, tug'ish, tug'ruqdan keyingi davr, tug'ruqdagi morfologik o'zgarishlar tahlil qilindi. Platsentar disfunktsiyasining gistologik belgilari va yo'ldoshdagi yallig'lanish o'zgarishlarining kombinatsiyasi bilan homiladorlik va tug'ilishning murakkab kechishi kuzatildi. Materiallar va usullar: homiladorlik paytida platsenta disfunktsiyasi tashxisi qo'yilgan 102 tug'ruqxonada tug'ruqning morfologik tekshiruvi o'tkazildi. Natijalar: homiladorlik va tug'ish jarayoni ma'lumotlarini tug'ruqdagi tarkibiy o'zgarishlarga qarab taqqoslash birinchi va ikkinchi guruhda platsenta yetishmovchiligining paydo bo'lishidagi farqni aniqlashga imkon berdi. Xulosa: birinchi guruhdagi homilador ayollarda platsenta disfunktsiyasining paydo bo'lishining asosiy etiopatogenetik belgisi platsenta to'qimalari va membranalarining yuqumli shikastlanishi edi. Vaginal mikrosoenoz va infektsiyaning buzilishi uchun dispanserni ro'yxatdan o'tkazishda homilador ayollarni majburiy tekshirishni kiritish zarur.*

**Kalit so'zlar:** platsenta disfunktsiyasi, intraamnial infektsiya, ultratovush diagnostikasi, platsenta etishmovchiligi.

## Relevance

Placental insufficiency is one of the main causes of perinatal morbidity and mortality. Currently, acute and chronic infections occupy a leading place among the causes leading to the formation of placental insufficiency and perinatal pathology. In patients with viral and bacterial infection, the frequency of chronic placental insufficiency is 55,5–73,6% [8, 11, 13].

Placental insufficiency (placental insufficiency) is a syndrome caused by morphofunctional changes in the placental tissue, which is the result of a complex reaction of the fetoplacental system to various pathological conditions of the maternal organism (exogenous pathology, pregnancy complications). Morphologically, in placental insufficiency, invasive-dystrophic, pronounced compensatory-adaptive processes, circulatory disorders, pathological immaturity of the placenta are determined [10, 11, 14, 16]. The frequency of inflammatory changes in the placenta, according to various authors, ranges from 12.0 to 79.4% [4, 8,].

The analysis of structural changes after pregnancy makes it possible to establish the causes and characteristics of pathology during pregnancy, their connection with fetal development disorders, to determine the possible path of infection into the uterine cavity, to predict the course of the postpartum and early neonatal periods, to develop ways of treatment and prevention in the following pregnancy [2, 5, 15].

**The aim of our study:** to study and compare morphological changes in the placenta with the peculiarities of the course of pregnancy and childbirth in patients with chronic placental insufficiency.

## Materials and methods

Morphofunctional follow-up was performed in 102 maternity women who were diagnosed with chronic placental insufficiency during pregnancy. Histological examination of placenta, fetal membranes was carried out on paraffin preparations made according to the generally accepted method and stained with hematoxylin and eosin. The number of villi with varying degrees of maturity and vascularization was calculated, the location of the villi, the degree of development and nature of syncytial kidneys, signs of disorders of utero-placental and fetal-placental circulation were determined. Clinically, the diagnosis of chronic placental insufficiency in the antenatal period was confirmed in all maternity patients during histological examination of the placenta. Depending on the result of the morphological examination of the sequels, 102 patients were retroactively divided into two groups: the

first (I) consisted of 74 maternity women, in whom signs of inflammation and chronic placental insufficiency were detected in the placenta, the second (II) - 28 maternity women, in whom the placenta revealed- there are only signs of chronic placental insufficiency. A comparative analysis of the initial clinical characteristics of patients, the peculiarities of pregnancy, childbirth, morphological changes in the placenta was carried out. The diagnosis of chronic placental insufficiency was established in 102 pregnant women using external obstetric examination, ultrasound fetometry and placentometry, Doppler examination of blood flow in uterine arteries, umbilical cord vessels, cardiotography. Ultrasound examination was performed using ultrasound diagnostic devices «Mindray DC- 30" and "SONOSCAPE S22" with a convex sensor with a frequency of 3.5 MHz. The outcome of labor for the fetus and the course of the early neonatal period were analyzed in 102 children. The assessment of the condition of newborns was carried out on the Apgar scale, anthropometric indicators, morbidity in the early neonatal period. Histological examination of the post-dov was carried out using BIOLAN SK 14 microscopes (Poland).

The obtained results were processed statistically using Excel spreadsheets of Microsoft Office 2010 with the calculation of the arithmetic mean (M), the average error of the arithmetic mean (m). The reliability of the differences between the compared groups was evaluated by the Student's criterion. The differences between the compared values were recognized as statistically significant at  $p < 0.05$ .

### Result and discussion

The age of 102 examined pregnant women was 17-38 years. The patients in the two groups did not differ significantly in age composition, economic and social status. The somatic pathology in the anamnesis of the two groups studied occurred with the same frequency. Heart diseases co - sudiste system, respiratory system, gastrointestinal tract, renal pathology di anastasovna pregnant first and second groups ( $2,6 \pm 0,55\%$  and  $6,8 \pm 0,81\%$ ,  $1,8 \pm 0,68\%$   $4,5 \pm 1,00\%$  and  $4,7 \pm 0,42\%$  and  $8,6 \pm 0,69\%$  percent, to  $11,5 \pm 0,25\%$  and  $6,5 \pm 0,86\%$ , respectively). There were 46 first-time births in the first group ( $63,5 \pm 0,07\%$ ), in the second - 18 ( $64,7 \pm 0,14\%$ ). There were no statistical differences in the study of obstetric and gynecological anamnesis in pregnant women in both groups. The examined women revealed a high rate of medical abortions ( $26,7 \pm 0,16\%$  in the first group and  $25,1 \pm 0,34\%$  in the second group) and spontaneous miscarriages ( $11,4 \pm 0,94\%$  and  $8,6 \pm 0,69\%$ , respectively). There were no significant differences in the frequency of gynecological diseases in the anamnesis of patients in the two groups.  $85,9 \pm 0,05\%$  of patients of the first group and  $88,4 \pm 0,06\%$  of the second group were taken for dispensary registration before 12 weeks of pregnancy for real pregnancy.

**Table 1 Features of the course of pregnancy in the examined women**

Complications	I group (n=74)	II group (n=28)
Threat of termination of pregnancy:		
Up to 12 weeks of pregnancy	20 ( $26,8 \pm 0,17\%$ )	9 ( $34,3 \pm 0,29\%$ )
In the period of 13-22 weeks	32 ( $44,7 \pm 0,10\%$ )*	5 ( $17,7 \pm 0,43\%$ )
In a period of more than 22 weeks	8 ( $10,4 \pm 0,26\%$ )	3 ( $11,5 \pm 0,55\%$ )
Total:	60 ( $80,9 \pm 0,04\%$ )*	17 ( $52,0 \pm 0,21\%$ )
Gestosis	18 ( $25,6 \pm 0,17\%$ )	7 ( $26,4 \pm 0,34\%$ )
Anemia of pregnant women	28 ( $39,6 \pm 0,15\%$ )	10 ( $36,4 \pm 0,46\%$ )
ARVI	17 ( $24,5 \pm 0,28\%$ )	5 ( $21,3 \pm 0,69\%$ )
Colpitis	35 ( $48,0 \pm 0,20\%$ )*	3 ( $14,6 \pm 0,50\%$ )
Placental insufficiency	74 (100%)	28 (100%)

Note: \* — significant differences between groups ( $p < 0.05$ )

The most frequent complications of the current pregnancy in the two groups were the threat of termination of pregnancy, placental insufficiency, anemia of pregnant women, gestational pyelonephritis, ARVI, colpitis (Table 1). Gestosis, anemia of pregnant women, gestational pyelonephritis, ARVI, placental insufficiency were found in statistically the same number of pregnant women of the two groups. Miscarriage was detected in  $54,9 \pm 0,04\%$  of patients of the first group and in  $28,0 \pm 0,21\%$  of the second group ( $p < 0,05$ ). The threat of termination was significantly more often

diagnosed at 13-22 weeks of gestation in patients of the first group compared with the second group ( $46.7 \pm 0.12\%$  and  $19.7 \pm 0.44\%$ , respectively). Objective information about the state of the fetoplacental complex of pregnant women was obtained using ultrasound (ultrasound), cardiotocographic (CTG), and pre-pleromeric methods of investigation. The results of ultrasound fetometry, placentometry, and dopplerometry in pregnant women of both groups are shown in Table 1.

**Table 2 Results of ultrasound examination of pregnant women**

Ultrasound signs	I группа (n=74)	II группа (n=28)
Signs of premature maturation of the placenta	42 ( $58.0 \pm 0.08\%$ )*	9 ( $34.3 \pm 0.31\%$ )
Violation of the structure of the placenta	6 ( $8.6 \pm 0.33\%$ )	1 ( $3.6 \pm 1.42\%$ )
Increasing the thickness of the placenta	2 ( $3.6 \pm 0.48\%$ )	1 ( $6.2 \pm 0.81\%$ )
Reducing the thickness of the placenta	4 ( $4.8 \pm 0.40\%$ )	2 ( $5.2 \pm 1.00\%$ )
Low placentation	6 ( $8.8 \pm 0.32\%$ )	2 ( $5.3 \pm 0.80\%$ )
Abnormal amount of amniotic fluid:	36 ( $49.8 \pm 0.17\%$ )*	1 ( $3.6 \pm 1.42\%$ )
Polyhydramnios	19 ( $25.3 \pm 0.24\%$ )	1 ( $3.6 \pm 1.42\%$ )
Oligohydramnios	17 ( $12.5 \pm 0.28\%$ )	0
hemodynamic disorders in the "mother-placenta-fetus"	9,6 ( $13.4 \pm 0.30\%$ )	2 ( $8.0 \pm 0.70\%$ )
fetal growth retardation syndrome	14 ( $20.0 \pm 0.18\%$ )	2 ( $7.14 \pm 0.80\%$ )
Symmetrical form	12 ( $16.2 \pm 0.22\%$ )*	0
Asymmetrical form	2 ( $3.8 \pm 0.43\%$ )	2 ( $7.14 \pm 0.80\%$ )

*Note: \* — significant differences between groups ( $p < 0.05$ )*

Chronic placental insufficiency at 31-34 weeks of pregnancy was significantly more often verified in patients of the first group compared with the second group ( $55.3 \pm 0.09\%$  and  $34.3 \pm 0.31\%$ , respectively). Premature maturation of the placenta was detected in  $42.58.0 \pm 0.08\%$  of pregnant women of the first group and in  $34.3 \pm 0.31\%$  of the second group ( $p < 0.05$ ). Structural ultrasound lesions of the placenta (cysts, calcinosis, varicose veins of the placenta) were diagnosed 3 times more often in the first group. An abnormal amount of amniotic fluid was diagnosed in  $49.8 \pm 0.17\%$  of the first group of pregnant women and  $3.6 \pm 1.42\%$  of the second group ( $p < 0.05$ ). Polyhydramnios was found 3 times more often in patients of the first group compared with the second group. The symmetrical form of fetal development delay syndrome (FPRD) was significantly more often diagnosed during phe-tometry in the first group ( $16.2 \pm 0.22\%$ ) compared with the second group. The most common complications of labor in the first and second groups were labor disorders ( $8.7 \pm 0.31\%$  and  $12.4 \pm 0.62\%$ , respectively), untimely discharge of amniotic fluid ( $25.9 \pm 0.18\%$  and  $10.5 \pm 0.50\%$ , respectively), decompensation of placental insufficiency ( $4.6 \pm 0.33\%$  and  $2.2 \pm 1.10\%$ , respectively). The number of newborns born without asphyxia and in mild asphyxia was the same in the first and second groups ( $48.4 \pm 0.08\%$  and  $60.2 \pm 0.14\%$ ,  $11.8 \pm 0.19\%$  and  $21.3 \pm 0.41\%$ , respectively). In the state of asphyxia of moderate and severe stage, children of the first group were born 2 times more ( $19.0 \pm 0.20\%$ ) than in the second group ( $8.7 \pm 0.70\%$ ). Newborns with a body weight of less than 2,999 g were significantly more in the first group than in the second ( $36.7 \pm 0.14\%$  and  $11.6 \pm 1.62\%$ , respectively). The most common complications in the postpartum period in the women of the two groups were a defect of the placenta and subinvolution of the uterus. In the early postpartum period, the defect of the placenta was diagnosed 2 times more often in the women of the second group ( $17.7 \pm 0.46\%$ ) than in the first group ( $7.8 \pm 0.34\%$ ). The complication of the postpartum period associated with a violation of uterine contractile activity was more common in patients of the first group compared with the second group ( $20.5 \pm 0.15\%$  and  $13.5 \pm 0.56\%$ , respectively). Histological examination of 102 placentas revealed pathological changes that are morphological criteria of placental insufficiency (disorders of uteroplacental and fetal placental blood circulation, variants of pathological immaturity of villi), compensatory adaptive processes (Table 3). Disorders of uteroplacental circulation were found in 17 ( $23.9 \pm 0.17\%$ ) placenta of the first group and in 13 ( $46.9 \pm 0.23\%$ ) of the second group. Placental infarctions were significantly more often diagnosed in the first group than in the second. The frequency of histological changes in the infarction zone did not differ statistically in the two groups. The fullness of the villi was detected in the first group at 13 ( $18.0 \pm 0.24\%$ ), in the second group — at 3 ( $10.7 \pm 0.55\%$ ), loss Compensatory - adaptive processes in the form of hyperplasia

of capillaries of terminal villi in the placenta were detected significantly more often in women of the second group than in There are 8 (11.4±0.25%) and 11 (42.5±0.25%) maternity patients of the first group, respectively. Focal infiltration of the membranes, as a sign of fetal hypoxia, was significantly more often diagnosed in the first group 34 (46.7±0.10%) than in the second 4 (16.5±0.46%). Inflammatory changes in the placenta were diagnosed in all examined patients with placental insufficiency. Histological signs of placental insufficiency, combined with inflammatory changes in all parts of the placenta and in the fetal membranes, were diagnosed only in patients of the first group. Signs of amniotic, parenchymal and mixed types of inflammation in the placenta were revealed (Table 3).

**Table 3 The structure of morphological changes in the placenta**

Histological signs	I group (n=74)	II group (n=28)
Disorders of uteroplacental circulation:		
- placental infarction;	17 (23,9±0,17%)*	1 (4,4±1,0%)
- fullness of villi;	33 (45,8±0,12%)	9 (35,3±0,26%)
- loss of fibrin.	5 (7,8±0,33%)	3 (11,4±0,61%)
Total:	55 (76,2±0,15%)	13 (46,9±0,23%)
Disorders of fetal-placental circulation:		
— hemorrhage in the stroma of the villi;	13 (18,0±0,24%)	3 (10,7±0,55%)
— fibrosis of the stroma of the villi;	13 (18,0±0,24%)	3 (10,7±0,55%)
— endovasculitis. Total:	1 (0,89±0,99%) 27 (36,4±0,15%)	0 6 (21,4±0,32%)
Compensatory and adaptive processes:		
— angiomas	8 (11,4±0,25%)	11 (42,5±0,25%)*
Focal infiltration of membranes	34 (46,7±0,10%)*	4 (16,5±0,46%)

Note: \* — significant differences between groups ( $p < 0.05$ )

**Table 4 Localization of inflammatory changes in the placenta**

Histological signs	I group (n=74)	II group (n=28)
Amniotic type of inflammation:		
— chorioamnionitis;	13 (18,0±0,22%)*	0
— parietal deciduitis.	2 (3,6±0,49%)	0
Total:	15 (21,9±0,16%)*	0
Parenchymal type of inflammation:		
— basal deciduitis;	6 (8,5±0,29%)	0
— subchorial intervillesitis;	4 (5,6±0,30%)	0
— villusitis;	49 (67,1±0,08%)*	0
— omphalovasculitis.	2 (4,4±0,44%)	0
Total:	61 (77,1±0,05%)*	0
Mixed type inflammation	10 (14,3±0,22%)	0

Note: \* — significant differences between groups ( $p < 0.05$ )

The amniotic type of inflammation was detected in 15 (21.9±0.16%) placenta of the first group. The frequency of chorioamnionitis was 13 (18.0±0.22%) ( $p < 0.05$ ). Parenchymal type of inflammation in the form of basal deciduitis, subchorial intervillesitis, villusitis, omphalovasculitis was detected in 61 (77.1±0.05%) cases ( $p < 0.05$ ). Inflammation of the falling decidual membrane was noted in 6 (8.5±0.29%), inflammation of the intervertebral space - in 5.7±0.39%, inflammation in the umbilical cord vessels - in 49 (67.1±0.08%), inflammatory changes in chorionic villi were significantly more often detected in the placenta of the first group. The mixed type of inflammation was found in 14.3-0.22% of cases.

Comparison of the data on the course of the gestational process, depending on the structural changes in the placenta, allowed us to identify possible etiology and pathogenetic causes of placental insufficiency in the first group, since socio - biological and somatic risk factors for placental insufficiency in patients of the first and second groups were observed significantly the same. The presence of signs of a threat of termination of pregnancy in the first group at this gestation period was determined by the penetration of the trophoblast (the second wave of invasion) into the myometrial segments of the spiral arteries damaged by an infectious

agent. The threat of termination of pregnancy in this group was a specific clinical sign of an inflammatory lesion of the placenta, indicating the "maternal" stage of infection of the placenta, the presence of chronic intrauterine infection. Inflammatory lesions, circulatory disorders, depletion of compensatory and adaptive processes in the placenta, the long-term threat of pregnancy termination contributed to the formation of placental insufficiency in patients of the first group in earlier pregnancy, violation of fetal growth rate. Clinical manifestations of placental insufficiency were significantly more often verified at 31-34 weeks of gestation in patients of the first group ( $74.3\pm0.09\%$  vs.  $28.0\pm0.36\%$ ). During fetometry, the symmetrical form of intrauterine growth retardation syndrome was significantly more often diagnosed in pregnant women of the first group compared to the second group ( $16.2\pm0.22\%$ , respectively), due to the prolonged effect of pathological factors on the fetoplacental system from the early stages of pregnancy. In pregnant women of the first group, during placentometry, premature maturation of the placenta was significantly more often detected ( $58.0\pm0.08\%$  vs.  $34.3\pm0.31\%$ ), structural ultrasound disorders of the placenta (cysts, calcification, varicose veins of the placenta) were diagnosed 3 times more often, which corresponded to pathological morphological changes in the placenta (hemorrhages, placental infarcts, intravascular thrombi). Due to inflammatory and destructive changes in the amniotic epithelium of the fetal membranes, there was a violation of the processes of formation and absorption of amniotic fluid, therefore, an abnormal amount of amniotic fluid was significantly more often diagnosed in pregnant women of the first group ( $49.8\pm0.17\%$ ) than the second ( $3.6\pm1.47\%$ ). In patients of the first group in childbirth, untimely discharge of amniotic fluid was observed 2 times more often than in the second group due to infectious damage to the epithelium of the fetal membranes. The complication of the postpartum period associated with a violation of the contractile activity of the uterus (subinvolution) was more common in patients of the first group compared with the second group ( $20.9\pm0.18\%$  and  $12.5\pm0.55\%$ , respectively). This can be determined by damage to the muscle fibers of the spiral arteries by an infectious agent, a violation of local immune reactions in the endometrium, indicates the presence of a chronic latent intrauterine infection. The presence of placental insufficiency and inflammatory changes in the placenta in women of the first group led to a violation of the trophic, transport and metabolic function of the placenta, contributed to the birth of infants with low body weight. The body weight of newborns under 2499 g in the first group was 3.5 times more common than in the second ( $7.9\pm0.34\%$  and  $2.1\pm1.44\%$ , respectively). Newborns with a body weight of less than 2,999 g were born in the first group significantly more than in the second group ( $33.7\pm0.14\%$  and  $10.6\pm0.62\%$ , respectively). The preservation of pronounced compensatory and adaptive reactions in the placentas of the maternity women of the second group contributed to the birth of viable children, whose mass corresponded to the gestational age, even with a complicated course of pregnancy. The study of the localization and intensity of the inflammatory process in the tissues of the placenta made it possible to determine the ways of infection penetration into the uterine cavity in patients of the first group. The ascending path of infection was diagnosed in  $22.9\pm0.17\%$  of cases. According to the literature, the amniotic type of inflammation in the placenta occurs due to the upward spread of external infection with any types of initiating agents (Escherichia coli, Streptococcus faecalis, Staphylococcus albus and aureus, conditionally pathogenic flora, gardnerella, fungi, mycoplasma, chlamydia, germ simplex virus type 2, tuberculosis, syphilis) [3, 5, 6, 8, 9, 14]. In our study, the main route of infection of the placenta in patients of the first group was the hematogenous pathway ( $77.1\pm0.05\%$ ). With a hematogenous pathway of infection, the pathogen penetrates into the placenta through spiral arteria loss of decidual membrane, endometrial vessels with blood flow from the existing focus of infection in a pregnant woman. Hematogenous infection of the placenta is most often caused by enterococci, streptococci, staphylococci, mycoplasmas, chlamydia, tuberculosis bacillus, listeria, toxoplasmas, adenovirus infection, rubella, cytomegalovirus, herpes simplex virus type 1, spirochetes, hepatitis B virus, HIV [2, 38, 9, 14].

The results of our studies are consistent with the literature data on the role of infection as an aggravating factor during pregnancy, the development of placental insufficiency, and the unfavorable outcome of childbirth [6, 8, 11, 12]. Patients of the first group had 2 times more stillbirths and newborns in a state of moderate and severe asphyxia, body weight less than 2,999 g was significantly more common in infants of the first group, 7 out of 101 children of the first group were transferred to other hospitals for further treatment.

### Conclusion

1. The main etiopathogenetic moment of the occurrence of placental insufficiency in pregnant women of the first group was an infectious lesion of placental tissue and fetal membranes. The pathogenesis of placental insufficiency in inflammatory damage to the placenta was based on disorders of uteroplacental circulation (placental infarcts, fullness of villi, fibrin prolapse), inflammation of the fetal membranes and chorionic villi (chorioamnionitis, villitis).

2. Placental insufficiency with inflammatory damage to the placenta occurs up to 30 weeks of gestation, against the background of a long-term threat of termination of pregnancy, with pronounced clinical manifestations (SDRP).

3. Characteristic echographic markers of inflammatory damage to the morphological structures of the placenta are premature aging of the placenta, an abnormal amount of amniotic fluid, a symmetrical form of SDRP.

4. The main route of infection of the placenta in the first group was the hematogenic pathway, which indicates a high prevalence and chronic latent course of sexually transmitted infections in women of reproductive age.

5. In the modern algorithm of prenatal monitoring, it is necessary to include mandatory examination of pregnant women at the initial admission to the dispensary for the presence of violations of vaginal microcenosis and sexually transmitted infections (ureaplasmosis, mycoplasmosis, chlamydia, cytomegalovirus, HSV-2, papillomavirus infection). Placental insufficiency has a multifactorial nature. A special place in its etiology is occupied by acute and chronic infections leading to placental insufficiency, complicated course of pregnancy, childbirth, postpartum period, perinatal morbidity and mortality. In perinatal infectious pathology, the main importance belongs to sexually transmitted infections and violations of the microbial ecology of a woman's genital tract. Based on the data obtained, we consider it necessary to include examination for sexually transmitted infections (ureaplasmosis, mycoplasmosis, chlamydia, cytomegalovirus, HSV-2, papillomavirus infection) in the scope of examination of pregnant women during initial admission to the dispensary in order to reduce the pathology of the gestational and perinatal periods.

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