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Characteristics of the Histological Structure of the Placenta in Premature Birth

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Annotation: An analysis of histological studies of the placenta in premature birth is presented.

Keywords: premature birth, postpartum, placenta, histological.

Relevance : At the present stage, abortion and premature birth are an urgent medical and social problem, as they determine a high level of neonatal and perinatal mortality and are directly related to the health of the population. Despite the successes achieved in perinatal medicine, the rate of premature birth does not have a stable downward trend and is 4.5-6%. Nevertheless, premature babies continue to occupy the first place in terms of morbidity and mortality. Perinatal mortality in this group is 35 times higher than in full-term children. Among the causes of abortion, sexually transmitted infections and impaired immunity in the woman's body, severe extragenital pathology of the mother, pregnancy complications in the form of gestosis and placental abruption prevail. The purpose of this study was to study the morphofunctional characteristics of the placenta during premature birth. In the pathology of the placenta, various morphofunctional changes are detected: impaired maturation of the villous chorion, inflammation, involutional-dystrophic changes, circulatory disorders, and pathological maturation of the villous chorion. Recurrent abortion is characterized by premature maturation of the villous stroma, involutional-dystrophic changes in the structural elements of the chorion and decidual tissues, as well as widespread circulatory disorders. Premature births not associated with recurrent abortion are characterized by immaturity of placental structures that differs from the physiological maturity corresponding to the gestational age. The following types of villous chorion maturation disorders are distinguished:

- accelerated maturation of the villous chorion
- dissociated maturation of the villous chorion
- delayed maturation of the villous chorion

1. Accelerated maturation of the chorion villi usually occurs in the last 8-10 weeks of pregnancy on the basis of a normally developing placenta. It is observed in late toxicosis of pregnant women, repeated abortion, prolonged threat of miscarriage, chronic pyelonephritis, etc.
2. Dissociated maturation is characterized by the presence of villi of various sizes, varying degrees of maturity and vascularization, which can be combined with congenital malformations of the fetus, as well as chronic villusitis.
3. Slow maturation of the placenta can occur in cases of isosensitization by the Rh factor, diabetes mellitus and some forms of infectious diseases (syphilis, toxoplasmosis). Circulatory disorders include heart attacks, thrombosis, hyperemia and a decrease in the rate of vascularization of the villi. Among the involutive-dystrophic changes, an increase in the amount of fibrinoid, dystrophic calcification and fibrosis of the villous stroma are observed. Typically, fibrinoid accumulates in the intervillous space and during the normal course of pregnancy, reflecting the aging process of the placenta, but does not exceed 10% of the placental surface. Increased fibrinoid deposition reflects the state of immunological protection of the villous chorion and a frequent violation of its protection. Such changes in the placenta are characteristic of gestosis, chronic renal failure and the threat of long-term abortion. Pathological immaturity of the placenta (predominant variant of embryonic villi, chorangiosis, dissociated development variant, obliterating angiopathy) occurs in

early gestosis of pregnant women, diabetes mellitus, isoserological incompatibility of blood. Often leads to antenatal fetal death, fetal malnutrition and miscarriage, but with insufficient vascularization of the villi, pregnancy can develop prematurely. According to WHO, intrauterine infection causes death in 22% of newborns: 20% of embryos and fetuses die in utero or are born with developmental defects. Intrauterine infections are caused by various viruses, mycoplasmas, bacteria, protozoa and fungi. Infectious agents enter the fetal body in various ways;

Materials and methods of the study:

152 anamnesis and biopsy cards were studied, which were divided into 4 groups depending on the gestational age:

1. Preterm birth at 22 to 27 weeks of gestation (39 cases and biopsy cards)
2. Preterm birth at 28 to 33 weeks of gestation (39 cases and biopsy cards)
3. Preterm birth at 34 to 37 weeks of gestation (38 cases and biopsy cards)
4. Term birth (36 case histories and biopsy cards)

Research results: Statistical processing was carried out by calculating the arithmetic mean (M), the average arithmetic error (m) and the average arithmetic error (m). indicators (p) taking into account the level of confidence using the student test -Fisher (T). Research results: The following changes were detected in the placenta during premature birth: 1. Villous chorion maturation disorders (67.3 +/- 6.4%) 2. Inflammatory changes (60 +/- 9%) 3. Involutional-dystrophic changes (24.8 +/- 8%) 4. Circulatory disorders (16.4 +/- 7%) 5. Pathological immaturity of the villi. chorion (12 +/- 6%) Depending on the duration of pregnancy, various changes prevail in the placenta (Table 1): 1. The number of inflammatory changes in the placenta is significantly reduced from 87.2 + / 10.6% (in group 1). up to 27. 8+ /-14.4% (in the control group) (T = 5.9) 2. The percentage of inflammatory changes in the placenta (32.2 +/-15.4%) during pregnancy from 34 to 37 weeks is close to the percentage of inflammatory changes in the term birth period (28.7 +/- 14.4%) (T = 0.6) 3. The number of involutive-dystrophic changes in the placenta is significantly reduced from 33.3. +/-15% in group 1 to +/-13% in group 3 (T=3.3) 4. With increasing gestational age at preterm birth, the percentage of villous chorion maturation increases significantly (from 56.2 +/- 15.9% in group 1 to 79 +/- 13% in group 3 (T=3.9)), and in the control group, villous chorion maturation is significantly lower (13.7 +/- 11.4%) (T=5.6) 5. Pathologically immature villous chorion is more common at 22 to 27 weeks of gestation (20.5 +/- 12.4%), which exceeds the corresponding figure in other groups (T=2). 6. There is a tendency for the number of placental abruption to increase as the duration of pregnancy increases from 7.6 +/- 8.4% in the first group to 23.7 +/- 12.2% in the third group. The rate of premature placental abruption in preterm labor is 9.4 +/- 5.4%, which is significantly higher than the general population rate by 0.1% (T = 3.4); in addition, at 22-27 weeks of pregnancy it is 20.5 +/- 12.9% (T = 3), at 28-33 weeks of pregnancy with preterm labor it is 5.1 +/- 7% (T = 3), at 34- 37 weeks of pregnancy it is 2.6 +/- 5% (T = 0.9). The pathogenesis of premature placental abruption is multifactorial. angiopathy of the uterine vessels, in particular, insufficient intrauterine remodeling of the uteroplacental arteries, which leads to a lack of blood flow to the villous cavity of the placenta, as a result of which the nutrition of the syncytiotrophoblast deteriorates, villous sclerosis occurs, capillary narrowing occurs, which leads to a malfunction of local hemostasis mechanisms and the formation of a retroplacental hematoma. Histological examination of the placenta with premature separation during premature birth revealed impaired villous chorion maturation (54.5%), involutional-dystrophic changes (45.5%), inflammatory changes (45.5%), circulatory disorders (9%); in 2 cases (18%), histological examination of the placenta did not reveal abnormalities. The frequency of multiple pregnancies in the period of preterm birth exceeds that of preterm birth (2.6%) and is 5.13% in groups 1 and 2 and 18.4% in group 3. In histological examination of the placenta during preterm birth in multiple pregnancies, accelerated maturation of the villous chorion (82%) and involutive dystrophic changes in the placenta (54.5%) come to the fore, which is significantly higher than the corresponding average indicators of preterm birth in singleton pregnancies (T = 2). The frequency of gestosis in preterm birth is 13.8 +/- 6.2%

compared to 16% +/- 12% in the control group; the frequency of CPRF in preterm birth is 26.7 +/- 8.2%, which does not differ significantly from the level of 22.2% +/- 13% in the control group. The changes detected in gestosis and chronic renal failure in premature birth do not differ significantly from the corresponding average statistical indicators.

CONCLUSION The following features of the histological structure of the placenta during preterm birth were identified: 1. In the early period of pregnancy (22-28 weeks), inflammatory changes in the placenta predominate in preterm birth.2. In the late period of pregnancy (33-37 weeks), the most common disorder in the placenta during preterm birth is the immaturity of the villous chorion in combination with circulatory disorders and involutional-dystrophic changes.3. The frequency of premature placental abruption in preterm birth is significantly higher than in the general population and occurs against the background of inflammation and involutional-dystrophic changes in the placenta.

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