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CLINICAL AND MORPHOLOGICAL PARALLELS IN PRETERM BIRTH

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Abstract

The aim of the study was to establish a link between the timing of preterm birth and clinical groups of women of different ages.

There were demonstrated the differences in the incidence of preterm birth among women of different reproductive ages in our study were not found ($p > 0,05$). The rate of cesarean delivery was higher ($p > 0,05$) in women who gave birth from 22 to 27 weeks of gestation. The threatened abortions in the I and II trimesters were observed in women of all groups. In women of the I and II groups the phenomena of placental dysfunction in the form of infarcts and retroplacental hematomas on the background of various urogenital infections were revealed. Indicators of compensatory-adaptive response in the placenta are better developed in women who gave birth at 33-37 weeks. Developmental pathology and location of the umbilical cord occurred in women whose children were born in the terminals from 22 to 33 weeks of pregnancy. Mortality among children at 22-27 weeks was higher in parallel with a higher percentage of cesarean sections in the same group compared to the other two groups

Key words: preterm birth; pregnancy; placenta pathology

The problem of premature birth remains acute due to the high percentage of infant morbidity and mortality depending on the date of birth. The pathophysiology of preterm labor involves at least four primary pathogenic processes that result in a final common pathway

ending in spontaneous preterm labor and delivery: premature activation of the maternal or fetal hypothalamic-pituitary-adrenal axis; inflammation and infection, decidual hemorrhage, pathological uterine distention [1]. More often, the group of high-risk women is formed by women who are born prematurely, women with progesterone deficiency, women with cervical failure, women with uterine malformations, women who have sexually transmitted infections and disturbed vaginal microbiome. The probability of premature birth in them is 30-35% compared with women at low risk [2, 3]. High rates of infant morbidity and mortality are forcing obstetricians and gynecologists around the world to do research and revisit preventive measures for premature birth [4, 5].

The aim of the study was to establish a clinical and morphological parallels in preterm birth at different gestational age.

Materials and methods in our study involved 39 women, their age ranged from 19 to 42 years. 21 (53,8%) women lived in Odessa region and 18 (46,2%) women lived in the city of Odessa. All women gave birth in the "Municipal Institution Maternity Hospital No 5" of Odessa City Council. The women in our study were divided into three groups: group I consisted of women who gave birth from 22 to 27 weeks of pregnancy (n=9 або 23,1%), women of group II gave birth from 28 to 33 weeks (n=14 або 35,9%) and group III included women (n=16 або 41,0%) who gave birth from 34 to 37 weeks of pregnancy. All pregnancies were singleton. Their obstetric and gynecological anamnesis were clarified by the method of questionnaires, the peculiarities of the course of this pregnancy and childbirth were studied, the data of clinical examination and data of each child born prematurely were studied. Histological examination of placentas was carried out according to generally accepted recommendations and methods [6]. Statistical data processing was performed using Fisher's test [7], null hypothesis was accepted at a value of P=0.05.

Results of the research. The study found that 15 (38,5%) women gave birth for the first time, 24 (61,5%) women were reborn, medical abortions occurred in 7,7%, spontaneous abortions were noted by 12,8% of all women surveyed, pregnancy on the background of moderate preeclampsia was noted in 41,0 % of respondents.

Vaginal delivery occurred in 56,4% of all women in our study, cesarean section was noted by 44,6% of women surveyed. More often by caesarean section was provided to women in group III (81,3%) according to the testimony of the child. Infant mortality rates were significantly higher ($\varphi^2=0,36$ p=0,0006) among children of women of group I (77,8%) and group II (21,4%) in contrast to children of women of group III (6,3%). The threatened abortions in the first trimester were noted among women of the first group in 11,1% cases, the

second group of observation in 14,3% and group III - in 6,3% of cases, urogenital infections occurred in women of all groups. At birth, children of women of group I had scores of 5-6 points on the Silverman scale, children born by cesarean section had 7-8 points on the Apgar score, and those who appeared as a result of vaginal birth had 7-7 points on 1 and 5 minutes of birth. The average body weight of children at birth in women of group III was (2121 ± 11) g appearing as a result of vaginal delivery had 7-7 points by Apgar at 1 and 5 minutes of birth. The average body weight of children at birth in women of group III was (2121 ± 19) g appearing as a result of vaginal delivery had 7-7 points at 1 and 5 minutes of birth. The average body weight of children at birth in women of group III was (2121 ± 12) g, average height 46 ± 8 cm, in women of group II the average weight of the child was (2041 ± 21) g, height- (44 ± 4) cm, in women of the I group – (828 ± 13) g, and height (41 ± 5) cm. Delayed fetal development was observed in 33,3% of cases among women of group I and 21,4% - in women of group II and was not observed among children whose mothers belonged to group III.

Histological examination in the placentas of women of group I showed circulatory disorders in the form of decompensatory hypoplasia in the terminal villi and capillaries, as well as inflammatory changes and disorders in cell differentiation. In women of group II placentas of small mass were observed, microscopically revealed disorders of vascular differentiation, circulatory disorders such as heart attacks and single retroplacental hematomas, in women of group III histological examination revealed mainly compensatory hyperplasia of terminal villi and capillary membranes (Fig.1, 2).

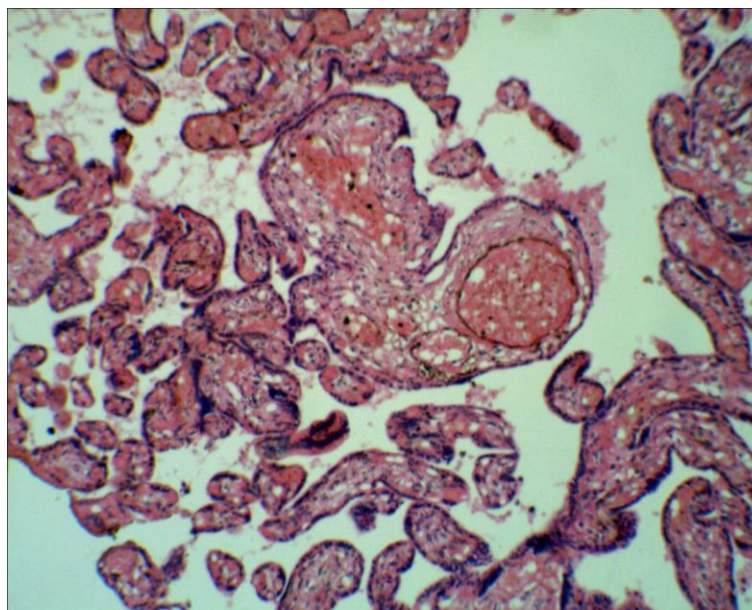


Figure 1

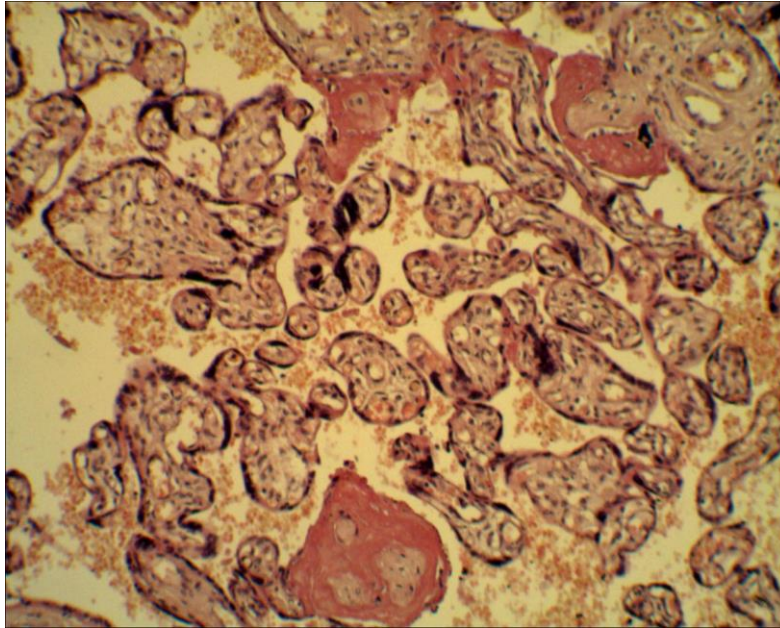


Figure 2

In women of group I, the average weight of the placenta was (260 ± 30) g, average weight of the newborn (828 ± 35) g, FPWR = (0.17 ± 0.03) (Fetal Placental Weight Ratio). In group II, the average weight of the placenta was (340 ± 25) g, the average weight of the newborn was (2041 ± 30) g, FPWR = (0.18 ± 0.003) , the weight of the manure in women of group III was (420 ± 12) , and the FPWR was (0.17 ± 0.02) . Placental dysfunction on histological examination was confirmed in 6 (42,9%) women of the second group and in 4 (44,4%) women of the first group of observation. Microscopic examination of the placenta of women of groups I and II revealed their low weight and hypoplasia, as well as inflammatory changes, which indicate insufficient compensatory-adaptive reactions. Retroplacental hematomas with edema with plasmorrhagia and the presence of vascular thrombi in the basal plate were observed in women of both groups in 4 (18.3%) cases of women of the first group and in 8 (22.5%) cases of the second group. Marginal attachment was present in 4 women of the first group and the second group, with women of the second group in three cases combined with a short umbilical cord and the presence of a thin umbilical cord in two cases.

The placentas of women who gave birth at 33-37 weeks differed in that they had compensatory hyperplasia of capillaries, villi and syncytio-capillary membranes.

Conclusions:

1. In women of the I and II groups the phenomena of placental dysfunction in the form of infarcts and retroplacental hematomas on the background of various urogenital infections were revealed;

2. Indicators of compensatory-adaptive response in the placenta are better developed in women who gave birth at 33-37 weeks.

3. Developmental pathology and location of the umbilical cord occurred in women whose children were born in the terminals from 22 to 33 weeks of pregnancy.

4. Mortality among children at 22-27 weeks was higher in parallel with a higher percentage of cesarean sections in the same group compared to the other two groups.

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