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FETAL FIBRONECTIN AS A TRIGGER MECHANISM FOR THE DEVELOPMENT OF PRETERM LABOR

ANNOTATION

Premature birth (PB) as is known, maternal, placental and fetal factors are involved in the development of premature birth. To date, the role of the fetus in the initiation of labor, including premature, is beyond doubt. In this regard, it is of interest to study the diagnostic significance of determining markers of fetal origin in the prediction of premature birth of Fetal fibronectin. The data obtained indicate that an increase in FFN in the gestation period of 30-34 weeks of pregnancy is apparently associated with rupture of the amniotic membrane.

Key words: premature birth; prediction; myoglobin; fetal fibronectin.

Premature birth (PB) remains one of the urgent problems of modern obstetrics, as it determines the level of perinatal mortality and morbidity [1]. Of no small importance are the psycho-social, economic, demographic aspects of the problem of miscarriage, as well as the frequency of this pathology, which has not tended to decrease over the past 20 years.

All this points to the need for a comprehensive study of the problem of premature birth, the search for new approaches to forecasting. Unfortunately, anamnestic data and clinical manifestations do not always sufficiently allow predicting premature birth in a timely manner. In this regard, researchers, based on pathogenetic mechanisms, suggest using hormonal parameters - estriol in saliva [6], immunological parameters - cytokines in amniotic fluid and cervical mucus [7-9] and others as markers of premature birth.

As is known, maternal, placental and fetal factors are involved in the development of premature birth. To date, the role of the fetus in the initiation of labor, including premature, is beyond doubt. In this regard, it is of interest to study the diagnostic significance of determining markers of fetal origin in the prediction of premature birth of Fetal fibronectin (FFN).

The aim of the study is the diagnostic significance of determining markers in predicting premature birth.

Materials and methods of research: A test system (Biomedical enzyme immunoassay of fetal fibronectin Adeza) was used to quantify fetal fibronectin in the contents of the cervix. The sampling of fibronectin tests was performed in pregnant women with whole amniotic fluid during pregnancy 30-35 weeks, since at these gestation periods during physiological pregnancy it is practically not determined in the cervical-vaginal contents (less than 50 mcg/ml).

This test is designed to determine the level of FFN in the vaginal secretions by visually assessing the color change in the test area. Anti-FFN antibodies were immobilized on the membrane surface in the test zone (T). If there is a sufficient amount of FFN in the sample, then a strip will appear in the T zone. The presence of a colored strip indicates a positive result, while the absence indicates a negative one, respectively. The presence of the strip in the control zone (C) serves as an indicator of the test performance.

128 pregnant women were examined, who were divided into the main group, which consisted of 93 pregnant women and a control group that included 35 pregnant women with the physiological course of pregnancy.

The results of the study: As can be seen from the table, in 66.6% of cases the test was positive and in 33.4% of cases it was negative. The dynamics of fetal fibronectin levels depending on the pregnancy period of women was also studied.

	Test (+)		Test (-)	
	АБС	%	АБС	%
(n=93)	62	66.6	31	33.4
(n=35)	2	5.7	33	94.3

According to the data obtained in the main group, it was found that out of 93 pregnant women, the test was positive in 62 pregnant women at different gestation periods. In 9 (9.6%) pregnant women at 30 weeks gestation, in 6 (6.4%) -31 weeks gestation, in 11 (11.8%) - at 32 weeks gestation, in 17 (18.2%) at 33 weeks gestation and in 19 (20.4%) at 34 weeks gestation period. In the control group of 35 pregnant women, only 2 (5.71%) were found at 34 weeks gestation.

	30 week		31 week		32 week		33 week		34 week		Total N of / Preg
	Abs	%	Abs	%	Abs	%	Abs	%	Abs	%	
Test +	9	9.6	6	6.4	11	11.8	17	18.2	19	20.4	(n=62)
Test -	5	5.3	7	7.5	4	4.3	9	9.6	6	6.4	(n=31)
Control group (n=35)											
Test									2	5.7	(n=2)

+											
Test -	-	-	-	-	-	-	-	-			(n=33)

As can be seen from the table, the longer the gestation period, the more often the result is positive. But considering the fact that fetal fibronectin is normally allowed in pregnant women up to 8 weeks of gestation and after 37 weeks of gestation, the data obtained indicate that this method can be attributed to the prognosis and one of the risk factors for the development of PB. It should be noted that there were 5 false positive tests for the presence of fibronectin in the contents of the cervix and 1 false negative test. False positive. tests were associated with the presence of bacterial vaginosis in the examined pregnant women.

The prognostic significance for a positive test was 91.1%; and for a negative test - 97.2%. It should be said that various authors [10] discuss the possible mechanisms of the appearance of fetal fibronectin in the cervicovaginal contents. It is believed that the chorionic trophoblast in the extracellular matrix is an important source of fibro-nectin in the cervico-vaginal secretion. Due to the fact that fetal fibronectin is mainly ex-pressed in the lower segment, two possible ways of its appearance in the cervico-vaginal secretion are assumed.

Path 1 - as a result of increased tone and contractility of the uterus, mechanical stress increases, changes occur on the part of the cervix, separation of the choriodecidual membrane, which leads to the loss of fetal fibronectin from its surface and the entry of extracellular matrix protein of fetal membranes into the cervical-vaginal secret.

Path 2 - bacterial infection enters the decidual membrane in an ascending way, an inflammatory reaction develops, bacteria and leukocyte protease destroy the decidual and chorionic extracellular matrix, as a result of which fibronectin appears in the vagina. The same inflammatory process provides a local release of cytokines and prostaglandins, premature maturation of the cervix occurs, labor pains begin.

Thus, the determination of the level of fetal fibronectin in the contents of the cervix from 22 weeks of pregnancy can be used as biochemical markers of premature birth.

According to the results obtained, in 66.6% of pregnant women of the main group, tast for FFN was positive, whereas in the physiological course of pregnancy – only in 5.7% of cases ($p<0.05$). The data obtained indicate that an increase in FFN in the gestation period of 30-34 weeks of pregnancy is apparently associated with rupture of the amniotic membrane.

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