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## **HORMONAL CHANGES OF FETOPLACENTAL COMPLEX IN PREGNANT WOMEN WHEN ABNORMAL PLACENTATION DURING EARLY GESTATION**

**Abstract.** *In the article the results of investigation of hormones of fetoplacental complex were provided, videlicet: estradiol, chorionic gonadotropin, progesterone and placental lactogen. Specific characteristics of changes of hormones of fetoplacental complex during early gestation in pregnant women with low positioning of chorion were investigated. Analysing the results of investigation the decrease of level of all hormones of fetoplacental complex in pregnant women with low placentation in comparison with control group was detected that could be considered as incipience of progression of primary placental dysfunction.*

**Key words.** *low placentation, the I trimester of gestation, hormones of fetoplacental complex.*

**Introduction.** Positioning of chorion and placenta within uterine cavity plays a special role in an elaboration of placental dysfunction. In accordance with literature data during I trimester of pregnancy abnormal placentation is occurred about 9-30% of the time, and prior to childbearing the frequency of low placentation fluctuates within limits of 9,1 % [1-3].

Thereafter hormonal function of chorion system and placental complex, which synthesize a variety of hormonal substances of as proteinous as steroidal origins, plays an important role in progression of pregnancy during the I trimester. Self-regulation in regard to maternal neuroendocrinal system [4] is specific characteristic of the functioning of an actual complex.

Abnormality of hormonal function of decidual and trophoblastic and also chorial and placental systems, which are assessed through changes of hormonal level that are produced by them, lies in the root of pathogenesis of different complications of pregnancy including progression of primary placental dysfunction [4].

Till now the search of new methods of early diagnostics and forecasting of primary placental dysfunction upon conditions of low placentation remains one of the prioritized directions of nowadays obstetrics. In this the assessment of hormonal catastasis of fetoplacental complex is extremely important during early gestation.

**Objective:** Investigation of engagement of hormonal function of placental system in pregnant women with low positioning of chorion during the first trimester of gestation.

**Materials and methods.** Index group was consisted of pregnant women with low positioning of chorion (50 pregnant women). Control group included 50 pregnant women with normal positioning of chorion within the body and fundus of uterus. Investigation was being carried out during the periods of 5-8 and 9-12 weeks of gestation.

By us the content of the following hormones was detected: estradiol, progesterone, placental lactogen and chorionic gonadotropin within blood serum by immunoenzymometric method, chemical reagents of the firms "Alkor-Bio" (Russia) and DRG (Denmark) were utilized.

Statistical processing of collected indices was carried out by estimation of Student's t-tests.

**Results and discussion.** Collected data showed that already during the I trimester of pregnancy the significant difference of concentrations of investigated hormones between pregnant women with low positioning of chorion and pregnant women with positioning of chorion within the body and fundus of uterus had place.

By us were found out that concentration of estradiol within blood serum of pregnant women from the index group was mionectic during whole I trimester. In particular content of an actual hormone was lower in comparison with the control group by 7,2% during 5-8 weeks period ( $p>0,05$ ) and by 23,93% during 9-12 weeks period of gestation ( $p<0,05$ ).

Estrogens deficit during early gestation causes to slowdown of synthesis and decrease of activity of enzyme systems, and also to slowdown of energy metabolism, accumulation

of glycogen and ATP in cells, increase of uterine activity.

Analyzing the hormonal state of pregnant women during the I trimester of gestation, we also found out that content of progesterone within blood plasma of pregnant women with a low placentation was probably lower in comparison with the control group by 10,86% during 5-8 weeks period of pregnancy and by 20,98% during 9-12 weeks period ( $p < 0,05$ ). Such changes witness about impairment of hormonal function as corpus luteum as decidual and trophoblastic complex that forms. It is common that progesterone is hormone that ensures maintenance of pregnancy, contributes the hyperpolarization impact on membranes of myometrium cells, suspends the uterine muscles activity.

Among the hormones of protein origin of placenta we determined chorionic gonadotropin (CG) and placental lactogen (PL), which were produced since early pregnancy by the cells of syncytiotrophoblast. During early pregnancy steroid function of corpus luteum is maintained by placental hormones – CG and PL. Upon conditions of low placentation the process of synthesis and secretion of CG is frustrated, in consequence of which its blood content is decreased. CG level in pregnant women with low positioning of chorion was definitely lower, than in pregnant women with positioning of chorion within the body and fundus of uterus. The content of chorionic gonadotropin within the blood of women with low placentation during the I trimester was estimated  $36990,0 \pm 210,0$  mg/l during 5-8 weeks of gestation, in the control group –  $43270,0 \pm 226,0$  mg/l ( $p > 0,05$ ); during 9-12 weeks –  $36194,0 \pm 395,0$  mg/l, in the control group –  $53700,55 \pm 525,0$  mg/l ( $p < 0,05$ ). In our opinion, such changes are connected with the fact that upon condition of low positioning of chorion during early gestation the robust gestational reconfiguration of coiled artery of the uterus is absent; the acute rheological shifts in intervillous space appear; so-called afunctional areas and pseudo infarcts form. In its turn this causes to harsh luminal occlusion and their complete obliteration. In consequence of which hormone producing function of chorion and placenta suffers that causes decreasing of CG level within blood plasma of pregnant women.

Carried out investigations also showed that

content of placental lactogen within blood plasma of pregnant women with abnormal positioning of chorion during 9-12 weeks of pregnancy was probably lower in comparison to the control group respectively:  $1,16 \pm 0,04$  mg/l and  $1,38 \pm 0,024$  mg/l ( $p < 0,05$ ). During the first half-time of pregnancy placental lactogen is secreted predominantly within foetal blood flow that directly influences the growth rate of foetus during this time period [5].

**Conclusions.** Thus investigation of hormonal function of fetoplacental complex in pregnant women with low placentation will allow diagnosing the progression of placental dysfunction during early pregnancy. Detection of laws of hormone producing function of fetoplacental complex will provide opportunity of forecasting of progression of placental dysfunction that will allow conducting the preventive measures and treatment of actual abnormality on time.

**Prospects for further research.** To draw out the algorithm of comprehensive diagnostics of primary placental dysfunction in pregnant women with low placentation.

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