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DIAGNOSTICS OF PLACENTAL DYSFUNCTION BY MEANS OF DETECTION OF SPECIFIC PROTEIN CONCENTRATION

Abstract. *The article deals with the results of investigation of immune-enzyme analysis of protein-produced function and its changes in the blood serum of pregnant women with signs of placental dysfunction. The changes of the indices indicated have been analyzed depending on application of a comprehensive treatment and prevention of placental dysfunction.*

Key words: *pregnant, proteins, placental dysfunction.*

Introduction. To provide a normal course of pregnancy the hormonal and protein-synthesizing functions of the fetal-placental complex (FPC) play an important role. The latter produces placental hormones and proteins regulating important processes essential for physiological course of gestation. Morphological changes in the placenta of pregnant women with signs of placental dysfunction are potentially associated with disorders of enzymatic, hormonal and protein-synthesizing functions of the FPC. Changes of the hormonal placental function in women which can form the basis of pathogenesis of various complications have not been studied sufficiently [1-3].

To evaluate the functional state of the FPC in women simultaneous detection of several hormones and proteins in the blood serum of a pregnant woman and placenta with a comprehensive evaluation of their results provide more information [3].

According to the literature evidence a high diagnostic value of the following specific proteins is detected: trophoblastic β 1-glycoprotein (TBG) – a specific marker of placental plasmodium function synthesized by the fetal part of the placenta, and placental α 1- microglobulin (PAMG) – a protein synthesized the maternal part of the placenta being an indicator of the decidual tissue function [6,7].

Objective: to improve the diagnostic efficacy of placental dysfunction in pregnant women by means of detection of the concentration of specific proteins in the blood serum.

Materials and methods. We have investigated

the concentration of specific proteins – trophoblastic β 1-glycoprotein (TBG) and placental α 1- microglobulin (PAMG) – in the blood serum of pregnant women of the main and control groups. Protein-synthesizing function was studied by means of solid-phase immune-enzyme analysis using test-systems based on the action of monoclonal antibodies (ДИА -М, Moscow).

The main group of pregnant women with signs of placental dysfunction was divided into two subgroups IA, IB. IA group included women with signs of placental dysfunction without specific prevention of placental dysfunction. IB group included pregnant women with signs of placental dysfunction with specific prevention of placental dysfunction. The control group included 40 healthy pregnant women. Clinical-laboratory examination was carried out according to the Order of the Ministry of Public Health of Ukraine № 233, dated 29.07.96.

Results and discussion.

With the purpose of a comprehensive study of the fetal-placental complex function we have investigated the concentration of proteins in the blood serum of pregnant women of the main and control groups: trophoblastic β 1-glycoprotein (TBG) and placental α 1- microglobulin (PAMG). The results of our investigation are presented in Table.

The rate of TBG was found to be the lowest in IA subgroup without initiation of specific prevention of placental dysfunction. Thus, in IA subgroup protein level was 1,2 times lower as compared to the indices of the control group. The tendency to reduction was found also in IB

subgroup where TBG index was in an average 1,3% less than that of the control group.

Table
Rates of specific proteins in the blood serum of pregnant women with signs of placental dysfunction ($\bar{x} \pm S_x$)

Index	Control group n=40	Main group (n=70)	
		IA subgroup n=35	IB subgroup n=35
TBG ng/ml	10,34±0,074	9,52±0,075 P _c <0,001	10,30±0,080 P _c >0,05 P _p <0,001
PAMG ng/ml	35,6±0,12	80,1±0,52 P _c <0,001	62,11±0,27 P _c <0,001 P _p <0,001

Note. P_c – probability of differences in average tendencies with the control group, P_p – probability of differences in average tendencies with other preventive method according to Student test.

The findings of the investigation presented in Table 1 illustrate that PAMG rate in the main group was much higher than that of the norm. Thus, in IA subgroup the concentration of specific protein was in an average 2,3 times higher than that of the control group, and in IB subgroup it was in an average 1,7 times higher than that of the norm.

Therefore, the changes indicated are of a prognostic value and in a complex with other diagnostic methods they prove disorders of placental function. An advanced level of PAMG in the blood serum of pregnant women with signs of placental dysfunction is indicative of decompensation of the placental system and insufficient barrier and protective functions.

Conclusions. 1. Investigation of specific proteins in the blood serum of pregnant women in dynamics enables to predict the development of placental dysfunction in women.

2. Detection of regularities in hormone-producing and protein-synthesizing functions of the fetal-placental complex is the marker of effective prevention and treatment of placental dysfunction in pregnant women.

Prospects of further studies. Under conditions of TB epidemic a dynamic monitoring of hormonal, protein-synthesizing and

morphological investigations of the FPC with the aim to prevent complications in pregnant women appears to be rather reasonable.

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