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Predicting Antinatal Ovarian DIC Syndrome with D-dimer Parameters

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Abstract Objective to determine the role of studying the parameters of the D-dimer in predicting the development of DIC in women with antenatal fetal death. Materials and research methods. A survey of 25 women with fetal death at gestational age, respectively, 2–3 trimesters of pregnancy. All patients initially had a hemostatic system disorder corresponding to the chronic form of DIC - syndrome.

Keywords DIC, DIC-syndrome, D-dimer, Antenatal fetal death

1. Introduction

Currently, intrauterine fetal death occupies a significant place in the overall structure of reproductive losses. Prolonged intrauterine delay of the dead fetal egg negatively affects the subsequent reproductive function, threatens not only the health, but also the life of the woman, primarily due to possible hemorrhagic complications. [1,11]

For many years, research by scientists has proved that in non-pregnancy pathological blood loss is mainly associated with the development of disorders in the clotting and anti-clotting systems based on the formation of DIC syndrome. Despite the fact that the pathomorphological mechanisms of the development and course of DIC syndrome are currently well studied, but the prognosis of the development of this terrible pathology remains a little-studied problem in modern obstetrics. One of the most recent and informative tests predicting the development of disorders in the hemostatic system is the study of the level of D-dimer specifically reflects the degradation of fibrin and to a certain extent serves as an indicator of the course of DIC syndrome. [5,7]

The purpose of our study was to determine the role of studying the parameters of the D - dimer in predicting the development of DIC in women with antenatal fetal death.

2. Materials and Methods

To assess the significance of D –dimer in predicting the likelihood of subacute DIC transition, 25 women with intrauterine fetal death at gestation, respectively, 2 - 3 trimesters of pregnancy, were monitored. All patients initially had a violation of the hemostatic system, corresponding to the chronic form of DIC-syndrome. The criterion for inclusion in this group was the presence of three or more adverse factors of the premorbital background (women over 35 years of age, 2-3 degrees of obesity, cardiovascular disease, and a history of abortion), since, if they are present, the risk of DIC progression is significantly high. The control group consisted of 15 women with normal pregnancy.

At gestation periods 24-26 and 33-36, clinical and hemostatic studies were performed. The clinical examination included analysis of complaints, collection of anamnesis, and physical examination.

The main methods of research were the study of parameters of the hemostatic system: D-dimer, aptv, GRP, PI, PDFF. Blood for hemostasiolgic examination was taken in the morning, on an empty stomach, from the ulnar vein, using a needle with a wide lumen, with a short-term tourniquet, in a plastic tube. The study was performed within 2 hours after receiving the plasma. Coagulation studies were performed using reagents from the company "Technology-Standard" (Barnaul) on a semi-automatic coagulometer. the D-dimer level was determined on the Bio-Rad 680 device. Statistical data analysis was performed using the SPSS-17 software package for applied statistics.

3. Results of the Study

It was found that in all cases of frozen pregnancy and the presence of signs of chronic DIC, an increased concentration of D-dimer in the blood was registered. If during the normal course of pregnancy, the concentration of D-dimer was 583.4+ - 21.6 ng / ml, then with the delay of the deceased fetus up to three weeks– 720,6 +- 31,4 ng / ml, more than

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three= weeks-754.2+-21.8 ng / ml. The presence of adverse factors of the premorbital background also led to a significant increase in the level of the D-dimer. Against the background of two or three factors, its value was 743.6+-26.8 ng/l, with four or five - 813,9+ – 26.3 ng/ml, and with six or more it increased to 843.7 + - 18.7 ng/ml. thus, the results of the D - dimer level study fully confirmed the presence of chronic DIC syndrome in the studied group of women. Further monitoring of this group of pregnant women for five days revealed the progression of DIC in 13 of them. Signs of the subacute form of DIC were: a decrease in the concentration of blood fibrinogen to 1, 15 g/l, thrombocytopenia - up to 95x10 g/l elongation of the total activity of blood clotting factors aptv - from 42.0 to 54.6 seconds, GRP - from 113.6 to 181.7 seconds, a decrease in PI from 86.1 to 41.3%, an increase in the plasma concentration of PFFF to 11.3 x 10-z M and a decrease in the intensity of platelet aggregation when stimulating Adp1x10-3 M from 27.5 to 18:%.

Dynamic monitoring of the level of D-dimer in the blood of pregnant women allowed us to establish that the main sign of DIC progression is a large range of fluctuations in the content of D-dimer in the blood of pregnant women. During five days of follow-up during normal pregnancy, the difference between the minimum and maximum levels of D-dimer in the blood of pregnant women did not exceed 50.3 ng / ml. in the group of pregnant women, in the absence of negative dynamics in the severity of DIC syndrome, the minimum value of D - dimer was 691.5+- 30.6 ng/ml; the maximum-816.8 +-26.7 ng/ml, i.e. differences were expressed as 125.8 ng / ml. In cases where the transition of the chronic form of DIC to subacute was observed during pregnancy, the minimum value of D-dimer was 640.6+ - 31.2 ng / ml, and the maximum value was 1004.2+-2.48 ng/ml. thus, the fluctuations in the D - dimer level for five days of observation in this case exceeded 360, 8 ng / ml.

Based on the above, it should be concluded that d - dimer fluctuations in the normal course of pregnancy varied within 15-20% of the average level, in chronic DIC syndrome they amounted to 30-40%, and in the transition of the chronic form to the subacute form they exceeded 80%.

4. Conclusions

Based on the results obtained, it can be concluded that changes of 50% or more are a prognostically unfavorable sign of the transition of the chronic form of DIC to the subacute stage in pregnant women with antenatal fetal death and requires timely medication correction of hemostatic system disorders in order to prevent the development of thrombogemoragic syndrome.

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