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THE ROLE OF PLASMA HEMOSTASIS INDICATORS IN THE DIAGNOSIS OF THROMBOGENIC COMPLICATIONS DURING PREGNANCY AND CHILDBIRTH

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ANNOTATION
The purpose of our study is to determine the role of studying the plasma link of the hemostatic system in the 3rd trimester of pregnancy, before childbirth and in the postpartum period for predicting thrombophilia conditions. Hemostasis indicators were studied in 170 women who were in the maternity hospital during the delivery period. The examined patients were divided into groups: group 1-women without hemostasis pathology (p= 110) and 2-group women with clinical manifestations of thrombophilia (p=60). Laboratory criteria for the selection were the data of hemostasis research, evidence of thrombophilia and hypercoagulability disorders.

KEYWORDS: Obstetric bleeding, hemostasis, hypercoagulation.

RELEVANCE

The hemostatic system is one of the basic systems of the body, which ensures the functioning of all organs. During pregnancy, a woman's body experiences physiological changes in all organs and tissues, which create favorable conditions for better adaptation of the mother's body to changes as the gestation period increases.

These physiological processes occurring in the body of a woman are very complex and they also ensure the normal functioning of the mother-placenta-fetus system. An important role in this case is played by the circulatory system, a feature of which during pregnancy is the formation of a new vascular pool – the utero - placental - fetal blood flow.

In recent years, the study of indicators of the hemostatic system has been given great importance as an important link in the development of complications during pregnancy, childbirth and the postpartum period. The state of the hemostatic system determines the course and outcome of pregnancy for the mother and fetus. Many complications are based on thrombophilic congenital and acquired disorders. A number of hemostatic disorders can cause clinical symptoms of thrombosis, cause a state of thrombophilia.[8,10]

Violations of the hemostatic system are one of the main causes of massive obstetric bleeding and are among the most dangerous complications of pregnancy. The condition for their effective treatment is knowledge of the physiological changes in hemostasis during pregnancy, as well as differentiated analysis of laboratory parameters and an integrated interdisciplinary approach using modern high-tech methods of drug therapy during pregnancy, childbirth and the postpartum period.[2,3,5] It is relevant to consider the features of physiological changes in the hemodynamics of the mother and placental complex, the hemostatic system during pregnancy and their changes in the pathological course of gestation, the search for markers of early diagnosis of hemostatic system disorders before childbirth and their drug preventive therapy before the development of labor in order to prevent massive obstetric bleeding, as the main cause of maternal mortality.

Purpose of research

To determine the role of studying the plasma link of the hemostatic system in the 3rd trimester of pregnancy, before childbirth and in the postpartum period for predicting thrombophilia conditions.

RESEARCH MATERIALS AND METHODS

Hemostasis indicators were studied in 170 women who were in the delivery period in the maternity Department of the Bukhara regional perinatal center. The age of women in labor ranged from 18 to 35 years, with an average of 24.7+ - 0.5 years. The examined patients were divided into groups: group 1-women without hemostasis pathology (p=110), group 2 - women with clinical

manifestations of thrombophilia (p=60). Pregnant and maternity women were examined at the end of the 3rd trimester at 39-40 weeks of pregnancy, in the early postpartum period and on 4-5 days after delivery.

The criteria for inclusion in the study were: personal and family history data indicating various symptoms of thrombophilic complications in patients and their relatives, fetal loss syndrome, severe preeclampsia in previous pregnancies. Laboratory criteria for the selection were the data of hemostasis research, evidence of thrombophilia and hypercoagulability disorders.

Methods for studying the plasma-coagulation link of hemostasis included the following tests: activated partial thromboplastin time (APTT) according to SAEP, prothrombin index (PTI), concentration of fibrinogen (f) in plasma according to CLAUSS, determination of soluble fibrin-monomer complexes by orthophenanthropine method.

RESEARCH RESULT

The results of our research are shown in the table below.

Changes in plasma hemostasis indicators in groups of patients in the 3rd trimester of pregnancy.
n =170

Term	Indicator	Group A (n=60)	Group B (n=110)
Before birth	F,g/l	2,8±0,21	5,8±0,14
	ACTV, with	27,9±0,69	23,9±0,24
	AVR, with	62,2±0,64	57,5±0,33
	PTI%	99,8±0,65	109,4±0,98
	Rfmc, mcg / ml	4,2±0,026	6,3±0,28
	D - dimer mg/DL	0,44±0,08	0,65±0,09
1st day	F,g/l	5,0±0,29	6,51±0,13
	ACTV, with	25,2±0,39	22,1±0,21
	AVR, with	59,0±0,67	53,2±0,49
	PTI%	106,6±0,68	126,5±0,9
	Rfmc, mcg / ml	4,5±0,21	6,5±0,22
	D - dimer mg/DL	0,43±0,08	0,91±0.09
5th day	F,g/l	4,2±0,18	5,5±0,13
	ACTV, with	26,7±0,52	23,6±0,34
	AVR, with	61,0±0,57	54,6±0,4
	PTI%	104,5±0,79	119,2±0,72
	Rfmc, mcg / ml	3,0±0,4	4,2±0,15
	D - dimer mg/DL	0,47±0,08	0,83±0,09

As a result of the analysis of the data obtained in healthy pregnant women, an increase in the concentration of f in plasma before delivery and in the first day after delivery by 80% and a gradual decrease by the fifth day was revealed. There was a slight increase in PTI before delivery, in the first and fifth days after delivery in comparison with the indicators in the 3rd trimester of pregnancy, which indicates the activation of the external blood clotting pathway during childbirth. In parallel with an increase in the concentration of f and the activity of the external coagulation pathway, the activity of the internal blood clotting mechanism also increases, which is reflected in the shortening of the APTT parameters. By the fifth day after birth, these indicators .The level of D – dimer did not change significantly before delivery and in the postpartum period.

As a result of comparison of plasma hemostasis data in women with clinical manifestations of thrombophilia, a 2-fold increase in the concentration of f in plasma before childbirth was revealed in comparison with data from healthy women. In the first day after delivery, the concentration of fibrinogen increased to 6, 51 g/l, and by the fifth day, there was a decrease in this indicator to the level corresponding to the prenatal period. F is the main substrate of a blood clot, so hyperfibrinogenemia in group 2 should be considered as a high risk factor for thrombosis in childbirth and the postpartum period. there was a significant increase in PTI and shortening of PV (P<= 0.001) at all stages of the examination in group 2 patients in the 3rd trimester of pregnancy in women with thrombophilia, the PTI index was higher by 9.6%, and the PV was shortened by 16% in relation to the indicators of healthy women.

On the first day after delivery, these indicators differed by 18 and 16%, respectively, and on the fifth day, the PTI was higher by 14%, and the PV was shortened by 18%. Changes in the PTI of PV indicate an increase in the activity of factors of the external coagulation pathway.

The activity of factors of the internal blood clotting pathway was determined using the methods of APTT and AVR. The indicators did not go beyond the reference limits, but in group 2 women their significant shortening was noted (p<=0, 001), which indicates a hypercoagulation shift and was considered as a risk

factor for thrombosis. Shortening of the AVR indicator indicates the activation of plasma and platelet clotting factors. By the fifth day after delivery, these indicators slightly lengthened, but did not reach the same values as in the group of women without hemostasis pathology.

In the group of women with thrombophilia, an increase in the concentration of rfmc before delivery was found by 50% relative to the norm. In the first day after delivery by 44%, on the fifth day this indicator approached the norm, but in comparison with group 1 it was increased by 40%. Rfmc are fibrin monomers and oligomers, as well as their complexes with fibrin degradation products, which reflect the activity of thrombin in vivo. Thanks to the quantitative expression of the results, the test allowed for dynamic monitoring of the rfmc content in plasma and monitoring the effectiveness of therapeutic measures.

The level of d-dimer indicators indicated the intensity of the processes of thrombosis and fibrinolysis. In the group of women with thrombophilia in the 3rd trimester of pregnancy, an increase in D - dimer to 0.65 mg / DL was noted, on the first day after delivery, there was a significant increase in this indicator to 0.91 mg/DL, on the fifth day the indicator was slightly lower - 0.83 mg/DL.

CONCLUSIONS

Thus, analysis of hemostasis data in healthy women indicates activation of the external and internal pathways of blood clotting before delivery and in the postpartum period. This may be due to the consumption of activated clotting factors in childbirth for inactivation. The revealed changes in the hemostatic system indicators are compensatory and adaptive in nature, contributing to the General mechanisms of adaptation to childbirth

In women with thrombophilia, there were significant changes in coagulation potential indicators, characterized by hypercoagulation, thrombinemia and a decrease in the reserve of natural anticoagulants, as well as a decrease in the activity of fibrinolysis. These changes were observed in the prenatal period, and increased in the first day after birth.

Based on the above, we can conclude that the established indicators of plasma hemostasis can be used as control indicators to assess the risk of thrombotic complications, the development of a high risk of pathological bleeding in childbirth and thromboembolic complications in the postpartum period. These indicators have a prognostic value and are the basis for preventive corrective therapy to prevent clinical manifestations of thrombophilia.

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