



FEATURES OF CENTRAL AND REGIONAL HEMODYNAMICS IN PREGNANT WOMEN WITH MITRAL INSUFFICIENCY COMPLICATED BY PREECLAMPSIA

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Article Received on 09/04/2020

Article Revised on 29/04/2020

Article Accepted on 19/05/2020

ABSTRACT

Annotation. Pregnancy is a significant effort for an altered heart with negative consequences for quality of life, disease progression, and mortality. The risk varies greatly among patients and depends not only on the type of cardiovascular disease. The clinician should share the risk and offer patients the right preliminary counseling and accurate follow-up.

KEYWORDS: dopplerometry, preeclampsia, mitral regurgitation, regional hemodynamic, central hemodynamic.

INTRODUCTION

The focus of health care in regions with high birth rates, including in the Republic of Uzbekistan, is on the state of maternal and child mortality, which is associated with their high rates, and the lack of any noticeable reduction, despite the efforts made.^[3,4]

The combination of pregnancy and heart disease is most often observed at the young and most able-bodied age, so this problem is of social significance. This problem is one of the most important parts of our health priority - reducing maternal and child mortality.^[2,7,8]

Acquired mitral defects of rheumatic etiology are the most common heart disease in pregnant women and account for 75-90%.

Heart defects are one of the most serious and dangerous complications of the gestational process, because they threaten the development of acute circulatory disorders, reactivation of the rheumatic process, the occurrence of episodes of thromboembolism and thrombosis, various complications of the gestational process, accompanied by DIC, preeclampsia (PE), purulent-septic diseases. Each of the listed risk factors has elements of a critical condition that threatens to kill the patient.^[1,5,6]

With formed rheumatic malformation of mitral valve insufficiency, pregnancy, creating an additional load on the heart and other vital organs, can contribute to the development of recurrent myocarditis and

decompensation of heart activity, especially in the third trimester. In pregnant women with mitral valve insufficiency, heart failure occurs in 5.5% of cases, accompanied in most cases by congestion, but not by pulmonary edema. Violation of hemodynamics and slowing of blood flow are the main cause of chronic hypoxia of the maternal body.

In patients with severe decompensation of blood circulation and active rheumatic process, pregnancy and childbirth occur, with obstetric complications and very often develops preeclampsia, while even its mild forms contribute to the increase of circulatory insufficiency.

Joining PE in pregnant women with mitral insufficiency creates a particularly serious situation, the resolution of which is often not in favor of the mother and fetus.^[3,7,8]

Purpose of research. Study of the effect of decompensation of heart activity and PE layering in pregnant women with mitral insufficiency on the state of maternal blood flow.

MATERIALS AND METHODS

We studied 82 pregnant women with mitral insufficiency. 27 (32.9%) were admitted with preeclampsia, 12 (44.4%) with mild and 15 (55.2%) with severe. We evaluated the severity of preeclampsia according to the who ICD-10 classification (2014), taking into account the background disease, which is

extremely valuable in patients with rheumatic heart diseases.

In the dynamics of pregnancy (at 28-32, 34-35 weeks), all the examined patients underwent a comprehensive clinical and laboratory examination and echo graphic examination (ECHO CG). Using the Sono-scapeSSI 5000 model China ultrasound diagnostic device, the study of Central maternal hemodynamics was used to determine the shock volume (UO), minute volume (MO), shock index (SI), heart index (SI), heart rate (HR), and total peripheral resistance (OPSS). The estimation of transformation parameters of Central hemodynamics (TF) mothers spent taking into account the original type TF, which is determined by the gestational age of 28-32 weeks pregnant women with mitral insufficiency without the activation of rheumatic process and without attaching PE. Statistical processing of the results was performed using the student's criterion using the Statgraf and MicrosoftExcel software package Windows versions.

RESULTS AND DISCUSSION

We examined 82 pregnant women with mitral insufficiency. The age of pregnant women was within the range of 21-38 years (on average- 25.3 ± 1.7 years). The gestation period ranged from 28 to 32 weeks. We chose the specified pregnancy dates because such a group of pregnant women is most vulnerable in terms of activation of the rheumatic process and the risk of hemodynamic shifts. When studying the course of previous pregnancies and childbirth, 21 (25.6%) pregnant women in this group had a complicated obstetric history. All examined women in this group had a history of rheumatism. The duration of the rheumatic

process in 55 (67.0%) was 8-16 years in the aisles, in 25 (30.4%) -6-9 years, only in 2 (2.4%) was 2 years.

Without exacerbation of the rheumatic process, 63 (76%) pregnant women were admitted, while 19 (23.1%) had reactivation of the rheumatic process upon admission.

When studying the degree of circulatory disorders, 1-degree was detected in 13 patients, 2 -degree-in 5, 2 -degree B - in one pregnant woman. Of 82 pregnant women with mitral insufficiency, 27 (32.9%) were admitted with preeclampsia, 12 (44.4%) with mild, and 15 (55.2%) with severe.

All 27 pregnant women in this group complained of General weakness, sleep disorders, body edema, joint pain, periodic paresthesia in the distal extremities and transient headaches in the back of the head. Edema spread to the lower extremities, anterior abdominal wall, and lower back. We paid attention to the moderate pallor of the skin.

In clinical and laboratory studies, all the women examined had severe anemia, a tendency to thrombocytopenia, and a tendency to accelerate ESR, especially due to the activation of the rheumatic process. For all the pregnant women in this group was characterized by a moderate hypoproteinemia, increase of fibrinogen, C - reactive protein and sialic acid.

In order to study in detail the state of the circulatory system, all these patients underwent ECG and ultrasound dopplerometry of the heart in dynamics.

Table №. 1: Indices of vollemia and TSH of pregnant women with mitral insufficiency with and without rheumatic process exacerbation.

n=56.

Indicators	Pregnant women with rheumatic process activation (n=19)	Pregnant women without activation of the rheumatic process (n=37)	P
circulating blood volume, ml / kg	59,2 $\pm$ 2,3	69,9 $\pm$ 3,7	<0,05
The volume of circulating red blood cells, ml / kg	21,1 $\pm$ 0,9	23,5 $\pm$ 1,7	>0,05
circulating plasma volume, ml / kg	38,1 $\pm$ 1,4	46,4 $\pm$ 2,0	<0,05
Indices of central hemodynamics			
stroke volume, ml	63,7 $\pm$ 2,9	86,5 $\pm$ 3,0	<0,05
Percussive index, ml / m ² .	37,5 $\pm$ 1,9	55,6 $\pm$ 2,4	<0,05
Heart rate in minutes	92,4 $\pm$ 3,9	81,4 $\pm$ 5,0	>0,05
Minute volume of blood, l / min	5,885 $\pm$ 0,271	7,058 $\pm$ 0,250	<0,05
Heart index, l / min / m ² .	3,36 $\pm$ 0,19	4,49 $\pm$ 0,273	<0,05
Central venous pressure, mm H ₂ O	103,4 $\pm$ 3,9	88,5 $\pm$ 3,8	<0,05
Mean blood pressure, mm Hg. Torr	75,6 $\pm$ 4,0	81,0 $\pm$ 5,2	>0,05
Coefficient of integral tonicity	73,3 $\pm$ 1,8	70,6 $\pm$ 1,4	<0,05
Total peripheral resistance, din.s.cm ⁻⁵ .	1449 $\pm$ 19,4	1114 $\pm$ 65,0	<0,05

From table 1, it is easy to see that the addition of rheumatic process activity and preeclampsia in the 3rd

trimester of pregnancy in women with mitral insufficiency is accompanied by a decrease in volemic

indicators, both due to globular and plasma volume, and there is almost no physiological increase in BCC.

Table №. 2: Comparative values of the indicators of volemia and CH in 3 groups of pregnant women. n=82.

Indicators	Igr-pregnant women with mitral insufficiency with activity of rheumatic process Circulatory disorders I-II degrees and preeclampsia (n=26)	II gr - Pregnant women with mitral insufficiency of the rheumatic process Circulatory disorders I-II degrees (n = 19)	III gr pregnant women with mitral insufficiency without rheumatic process activity (n=37)
circulating blood volume, ml / kg	59,2±2,2*	59,2±2,3*	69,9±3,7
The volume of circulating red blood cells, ml / kg	20,2±0,7	21,1±0,9	23,5±1,7
circulating plasma volume, ml / kg	30,7±1,5**	38,1±1,4*	46,4±2,0
Indices of central hemodynamics			
stroke volume, ml	59,0±1,6*	63,7±2,9*	86,5±3,0
Percussive index, ml / m ² .	33,7±1,6*	37,5±1,9*	55,6±2,4
Heart rate in minutes	101,1±3,9**	92,4±3,9*	81,4±5,0
Minute volume of blood, l / min	5,965±0,342*	5,885±0,271*	7,058±0,250
Heart index, l / min / m ² .	3,41±0,21**	3,36±0,19	4,49±0,273
Central venous pressure, mm H ₂ O	127,3±4,1**	103,4±3,9*	88,5±3,8
Mean blood pressure, mm Hg. Torr	102,3±5,7*	75,6±4,0	81,0±5,2
Coefficient of integral tonicity	82,4±1,4*	73,3±1,8*	70,8±1,4
Total peripheral resistance, din.s.cm ⁻⁵ .	1607±20,2**	1449±19,4**	1114±65,0

Note: the reliability is given relative to the data of the III group of patients * - P < 0.05, ** - P < 0.02

As for the indicators of CG, pregnant women with active rheumatic process significantly reduce the one-time and minute heart performance by 33% and 21.8%. The simultaneous increase in the values of OPSS indicates a tendency to deterioration of peripheral blood circulation and an increase in preload on the myocardium.

We found even more pronounced changes in the study of 27 pregnant women with mitral insufficiency, active rheumatic process, grade 1-2 NC, in whom the 3rd trimester of pregnancy was complicated by a layer of preeclampsia. The addition of PE was accompanied by a decrease in one-time heart performance and a significant increase in heart rate, due to which the minute volume of blood circulation practically did not change relative to the groups of pregnant women with mitral insufficiency and active rheumatic process. As for the minute performance of the heart in this group of pregnant women in comparison with pregnant women with isolated mitral insufficiency, without NC and activity of the rheumatic process and PE, their minute blood volume was lower by 15.5%. With the addition of PE, the tone of resistive vessels significantly increased, as evidenced by the indicators of CIT and in General OPSS. The deterioration of blood circulation indicators in pregnant women with mitral insufficiency, rheumatic process activity and PE is also evidenced by the KEC indicator, which was 32.3% lower than the same indicator in the group of pregnant women with isolated mitral insufficiency and 16.9% lower than in pregnant women with mitral insufficiency and active rheumatic process without PE.

Indirectly, the development of myocardial insufficiency in these patients is evidenced by a significant increase in Central venous pressure (CVD), which exceeded the physiological norm.

The comparative data obtained by us on the influence of rheumatic process activity and mild-to-severe preeclampsia on the studied indicators of the maternal circulatory system in pregnant women with mitral insufficiency show with sufficient clarity that the addition of rheumatic process activity in General worsens all the parameters of maternal blood circulation that we study.

Preeclampsia having a predominant influence on changes in blood circulation indicators of the mother, in the future can lead to systemic organ disorders - multiple organ failure.

CONCLUSION

Thus, the parameters of indicators of volemia, systemic and Central hemodynamics in pregnant women with mitral valve insufficiency without rheumatic process activity, circulatory disorders, preeclampsia and with such during gestation of 28-32 weeks indicated significant changes in the studied parameters, which cannot be taken into account when determining the risk of these categories of women in deciding on prolongation of pregnancy and choosing obstetric tactics.

It is extremely important in the 3rd trimester of pregnancy in patients with mitral insufficiency to

identify the nature of hemodynamics and the state of peripheral blood loss according to the indicators of CIT and OPSS, taking into account the nature of volemia.

In General, joining the activity of the rheumatic process with NC and PE in pregnant women with mitral insufficiency leads to significant total violations of the mother's blood circulation, which require immediate solutions to a number of issues.

- correction of changes in the mother's blood circulation;
- elimination of rheumatic process activity;
- correction of the manifestations of pre-eclampsia and NK;
- solving the issue of early delivery.

Timely and optimal solution of the above issues can contribute to achieving a successful outcome of pregnancy and childbirth in patients with acquired heart disease-mitral valve insufficiency.

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