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Analysis of the Course of Childbirth/Delivery and the Postpartum Period in Pregnant Women with Mitral Stenosis

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Abstract We conducted a retrospective analysis of the outcomes of childbirth/delivery in pregnant women with mitral stenosis. The article describes the course of pregnancy and childbirth/delivery in pregnant women with mitral stenosis using the method of retrospective analysis.

Keywords Mitral stenosis, Pregnancy, Childbirth, Delivery

1. Introduction

Pregnancy and childbirth/delivery with heart defects put the mother and fetus at exceptional risk. Of the total number of pregnant women suffering from heart defects, 90% of them have acquired rheumatic defects, and 88% of them have mitral stenosis [1,2]. It is known that overload and hypertrophy of the myocardium is observed with heart defects of various etiologies, accompanied by a decrease in myocardial contractility and a decrease in stroke volume [5]. In conditions of reduced systolic volume, the maintenance of the most important indicator of hemodynamics of cardiac output at an adequate level is possible due to an increase in heart rate and an increase in circulating blood volume [2,4].

Mitral stenosis is the most severe form of heart defects in pregnant women [3,6]. Mitral stenosis, "pure" or predominant when combined with mitral valve insufficiency, is the most common form of rheumatic disease, which is found in 75-90% of pregnant women suffering from acquired heart defects [3,4]. Unfortunately, the current tactics of pregnancy management, the proposed methods of childbirth/delivery, relief of delivery pain over the past 20 years have not allowed to significantly reduce the frequency of complications, maternal perinatal mortality [2]. It is known that defects and the related functional state of the heart affect the course of pregnancy in different ways and provide different degrees of risk to the mother and fetus.

In this regard, the retrospective analysis of the childbirth / delivery histories of pregnant women with mitral stenosis was conducted.

The purpose of the study. To study the frequency and course of pregnancy in women with mitral stenosis.

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2. Research Material and Methods

At the first stage of the studies, the retrospective analysis of the course and outcome of pregnancy, the condition of the fetus and newborns was carried out in 176 pregnant women with mitral stenosis in City perinatal center No. 1 for the period from 2018 to 2021. The average age of women was 26.1±0.4 years.

3. Results and Discussion

As follows from the data in Figures 1 and Table 1, among the patients, multigravida and multiparous women predominated. Thus, the proportion of primigravida was 31.8% and primiparous 36.9%. The high indicators of II and III pregnancies in women with mitral stenosis (25.0% and 18.2%, respectively) draws attention. In women with mitral stenosis, the high percentage of multiparous women was noted, the proportion of IV births was 11.4%. The results of the analysis indicate an unfavorable outcome of previous pregnancies.

Table 1. The results of the analysis of obstetric and gynecological history in 176 pregnant women with mitral stenosis

Parameters under study	abs.	%
spontaneous miscarriage/abortion		
- I	24	13.6
- II	5	2.8
Artificial/induced abortions		
- I	27	15.3
- II	12	6.8
- III и >	3	1.7
The course of previous childbirths/delivery		
- cesarean delivery	24	13.6
- vaginal delivery	129	73.3

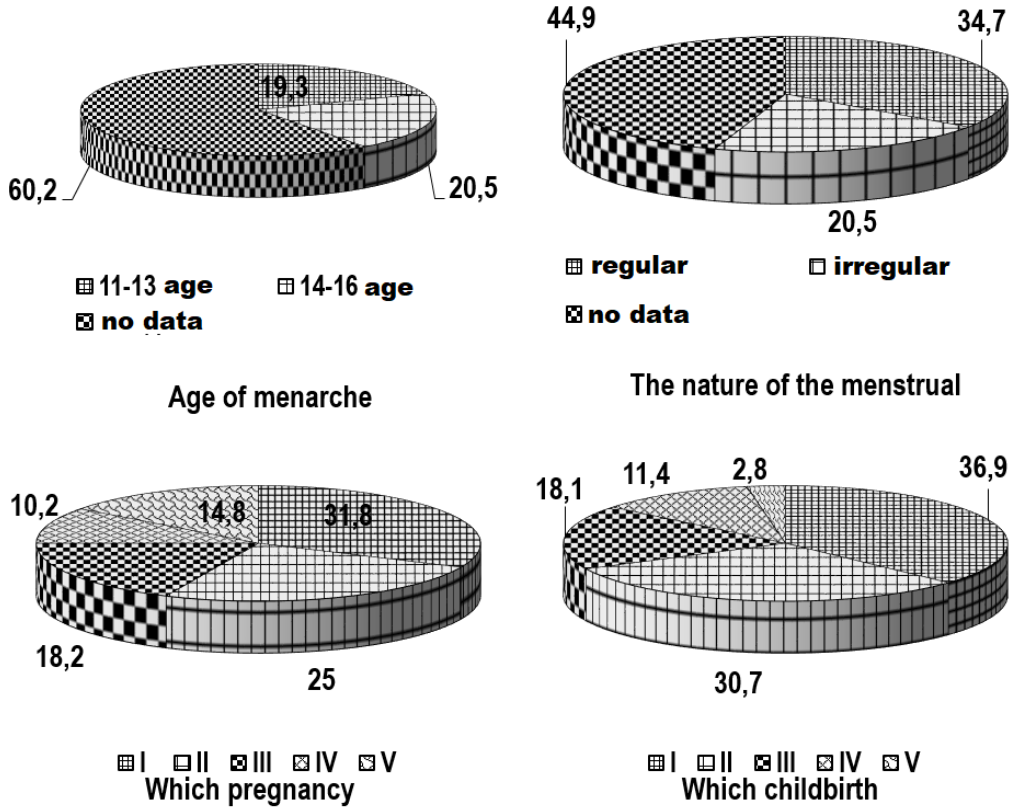

Figure 1. The results of the analysis of obstetric and gynecological history in pregnant women with mitral stenosis

Table 2. The course of pregnancy in 176 women with mitral stenosis

Parameters under study	abs.	%
First visit during pregnancy:		
- up to 12 weeks	56	31,8
- 12-16 weeks	86	48,9
- after 16 weeks	34	19,3
- did not attend the female consultation.	36	20,5
Number of visits		
- up to 5 times	138	78,4
- more than 5 times	2	1,1
iron deficiency anemia	155	88,1
Early pregnancy sickness	43	24,4
Preeclampsia	2	1,1
Diffuse increase of thyroid	75	42,6
Threat of spontaneous abortion	50	28,4
kidney disease	9	5,1
Premature detachment of a normally located placenta:	1	0,6
placenta previa	2	1,1
Hydramnios	2	1,1
oligohydramnios	7	4,0
Asthma	1	0,6
Large fetus / Fetal macrosomia	8	4,5
Gestational hypertension	3	1,7
Acute respiratory distress syndrome (ARDS)	16	9,1
Myopia	11	6,3

So the frequency of spontaneous abortions was 16.4%, artificial abortions 23.8%. The frequency of abdominal delivery was 13.6%.

As follows from the data in Table 2, only 56 (31.8%) women were registered in connection with pregnancy up to 12 weeks of gestation, 86 (48.9%) women at 12-16 weeks of gestation, and 34 women after 16 weeks of gestation. (19.3%). In the antenatal period, 36 (20.5%) women were not observed.

The high percentage of IDA among pregnant women with MS attracts attention, the frequency of which was 88.1%.

Among extra-genital diseases, diffuse increase of the thyroid gland was noted in 75 (42.6%) women with mitral stenosis. As for the course of pregnancy, the threat of spontaneous abortion was registered in 28.4% of cases, early pregnancy sickness was in 43 (24.4%) pregnant women.

Analysis of the course of childbirth/delivery showed the high percentage of complications in 112 (63.6%) pregnant women. The frequency of preterm birth was 8.0%, premature rupture of amniotic fluid was 10.8%. Attention is drawn to the high rates of caesarean section 103 (58.5%). Of the total number of operative deliveries, 40 (22.7%) were performed on an emergency basis, and in 63 (35.8%), a caesarean section was performed in a planned manner. In the postoperative period, 4 (2.3%) had hypotonic bleeding and 1 (0.6%) had pulmonary edema. The course of the postpartum period was also complicated: 18 (10.2%) women were diagnosed with uterine subinvolution. As for the method of anesthesia/pain relief, intubation (endotracheal) anesthesia

was performed in 20 (11.4%), epidural anesthesia was in 26 (14.8%), spinal anesthesia was in 38 (21.6%) patients.

Table 3. The course of childbirth/delivery and the postpartum period in 176 women with MS

Parameters under study	abs.	%
Delivery at term	162	92,0
Preterm delivery	14	8,0
Complications	112	63,6
- clinically contracted pelvis	15	8,5
- premature rupture of membranes	19	10,8
- period without amniotic fluid up to	42	23,9
- period without amniotic fluid up to 4	21	11,9
- period without amniotic fluid up to 14	1	0,6
- childbirth/delivery anomalies	1	0,6
- Manual exploration of the uterine cavity	7	4,0
- episiotomy	3	1,7
- perineotomy	2	1,1
Cesarean delivery	103	58,5
- emergency	40	22,7
- planned	63	35,8
- with tubal ligation	17	9,7
Postoperative complications		
- hypotonic bleeding	2	1,1
- pulmonary edema	1	0,6
Anesthesia/pain relief		0,0
- Intubation (endotracheal) anesthesia	20	11,4
- Epidural anesthesia	26	14,8
- Spinal anesthesia	38	21,6
Postpartum period		
- primary hypotonic bleeding	6	3,4
- subinvolution of uterus	8	4,5
- lochiometra	4	2,3

Table 4. Condition of newborns

Parameters under study	abs.	%
Height		
- 45-50	58	33,0
- 51-55	109	61,9
> 55	10	5,7
Weight		
< 2500	6	3,4
2500-4000	159	90,3
> 4000	12	6,8
Rating on the Apgar scale		
5-6	12	6,8
6-7	94	53,4
7-8	71	40,3
Diseases of the newborns		
Intrauterine hypoxia during childbirth	46	26,1
Respiratory failure in newborns	73	41,5
congenital pneumonia	1	0,6
Hemolytic disease of the fetus and newborn	1	0,6

As follows from the data in Table 4, 46 (26.1%) newborns were with low body weight. 18 newborns were born with a low Apgar score, of which 6 (3.4%) had a score of 3-4 points, 12 (6.8%) had a score of 5-6 points. The frequency of intrauterine hypoxia was 26.1%, respiratory failure of newborns was observed in 73 (41.5%).

4. Conclusions

Thus, the results of the retrospective analysis of the course of pregnancy, childbirth and the postpartum period in 176 women with cardiovascular diseases indicate that the formulation of the diagnosis, the determination of the degree of blood circulatory insufficiency do not meet modern requirements and the classification adopted in the world and in our country. This circumstance creates problems in the diagnosis and choice of tactics.

The results of the analysis showed complicated course of both pregnancy and the postpartum period, the high percentage of operative delivery. A generalized analysis of the course of pregnancy and childbirth in women with mitral stenosis was uninformative, since the tactics of managing pregnancy, childbirth, and the outcomes of childbirth largely depend on the type of heart defects and the severity of heart failure. Of particular interest is a differentiated approach to assessing the course and outcomes of pregnancy and childbirth, depending on the type of acquired defect, the state of myocardial contractility. The results of the retrospective analysis showed the absence of a unified tactics and strategy for managing pregnancy and childbirth in pregnant women with mitral stenosis. As for obstetric tactics, preference was given to operative delivery. High rates of caesarean section did not correlate with the condition of newborns in this cohort and led to high rates of perinatal morbidity and mortality. The current situation requires a revision of many regulations in the tactics of managing pregnancy and childbirth, leading to the issues of reclassification of cardiovascular diseases, pregravid preparation and the principles of managing childbirth and the postpartum period in accordance with international standards.

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