

The Role of Endometriosis in the Development of Complicated Pregnancy and Delivery

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Abstract: the article discusses the role of endometriosis in the development of complicated pregnancy and childbirth.

Key words: endometriosis, adenomyosis, placentation, hysteroscopic criteria.

Relevance. Over the past few years, a new direction in the field of reproductive medicine has been the study of the relationship between endometriosis (adenomyosis) and adverse pregnancy outcomes. According to expert reports, the incidence of endometriosis in active reproductive age in our country, Kazakhstan and Ukraine is 15-17%, in Belarus it is slightly less - 10%. A similar incidence is observed in other developed countries. Recent studies have shown that endometriosis and adenomyosis not only affect infertility, but are also associated with a number of obstetric complications after successful conception. Placentation disorders, increased cyclooxygenase-2 expression, prostaglandin secretion and chronic inflammation in the ectopic endometrium, early maturation of the cervix, and increased uterine tone and contractility in women with endometriosis can lead to various adverse effects for both the woman and the fetus and newborn (Brosens I.A. et al. 2007, Berlac J.F. et al. 2017).

The purpose of the study: to study the course of pregnancy, childbirth and the postpartum period in women with adenomyosis.

Material and methods of research: A retrospective analysis of the history of childbirth and outpatient cards of 203 women registered with the Russian Orthodox Church from 2018 to 2021 was carried out. According to outpatient charts, clinical, ultrasound data, 30 (14.8%) women suffered from adenomyosis, hysteroscopic criteria were detected in 37 (18.2%) patients. Depending on the presence of adenomyosis, two groups were formed: the main group (n=37) - pregnant women with grade 1 and 2 adenomyosis, the control group (n=166) - conditionally healthy pregnant women (random sampling method). The exclusion criteria were: age less than 18 or more

35 years old, complicated obstetric history, fibroids, uterine malformations, uterine scar, history of acute and chronic inflammatory diseases of the internal female genital organs, severe somatic pathology. Statistical analysis of the obtained data was carried out using descriptive statistics methods. The construction of frequency distributions was used (Fisher's angular transformation was used to compare two samples in percent). To describe quantitative data, the arithmetic mean (M) and standard deviation (SD) were used. When performing the main task of comparing two independent groups on the same basis, a two-tailed Student's t-test was used. Statistical analysis of the obtained data was carried out using standard methods of mathematical and statistical processing using Microsoft Office Excel 2013 and Statistica 6.0. Differences between groups were considered statistically significant at $p < 0.05$.

Research results:

A comparative analysis of gestation outcomes showed that in the group of patients with adenomyosis, the live birth rate was 90.6%, while in the control group this figure was higher and amounted to 98.7% (Table 1). The composition of reproductive losses in the aggregate consisted of spontaneous miscarriages, non-developing pregnancies, antenatal fetal death, and very early and early preterm births ending in early neonatal mortality. Pregnancy in women with adenomyosis in the 1st and 2nd trimester was complicated by spontaneous miscarriages in 8.1% of cases, which is 2.7 times higher than in the control group (3.01%). Non-developing pregnancy in the group of women with adenomyosis occurred in 2 cases (5.4%) at 8-10 weeks and at 15-16 weeks of gestation.

Apparently, this is due to violations of the processes of implantation and placentation against the background of adenomyosis, which is confirmed by the data of other researchers (...).

The most frequent complications of the second half of pregnancy were very early and early premature births, the frequency of which in the group of women with adenomyosis was 13.5%, which is 22 times higher than in the group of women without adenomyosis. In the control group, there were no very early preterm births, and only in 1 (0.6%) patient, the pregnancy ended in early preterm birth at 28-29 weeks of gestation. As a result, the frequency of preterm birth was 24.3% in the group of pregnant women with adenomyosis, which is 5 times more common than in women without adenomyosis.

Table 1.
Pregnancy outcomes in women with adenomyosis.

Outcomes of gestation	Pregnant women with adenomyosis (n=37)		Control group (n=166)	
	abs	%	abs	%
Spontaneous miscarriages	3	8,1	5	3,01
Non-developing pregnancy	2	5,4	2	1,2
Very early and early preterm birth	5	13,5	1	0,6
preterm birth	4	10,8	7	4,2
Antenatal fetal death	2	5,4	-	-
live birth	29	90,6	157	98,7
Stillbirth	3	9,3	2	1,3

control, while 2 (1.3%) pregnant women from group I were urgently operated on at 32-34 weeks due to premature detachment of a normally located placenta, 1 (0.65%) patient - due to severe preeclampsia and 2 (1.3%) - due to the critical condition of the fetus against the background of intrauterine growth retardation of the 2nd degree.

The frequency of complications of the gestational process in pregnant women with adenomyosis was 56.8% (87 patients) versus 18% (27 patients) in pregnant women of the control group. In pregnant women of group I, there was a significant ($p < 0.05$) increase in the frequency of early preeclampsia in pregnant women - 60.8% of cases (group II - 16.7%), the threat of spontaneous miscarriage - 66.7% (group II - 16.7%), threatening preterm birth 67.9% (Group II - 17.3%), placental insufficiency with impaired fetal hemodynamics - 49% (Group II - 22.7%), oligohydramnios was noted in 56.2% of pregnant women, polyhydramnios in 7.8% (12 patients), intrauterine growth retardation - in 10.5% (16 patients). In the control group, the frequency of complications of the gestational process was significantly lower: early preeclampsia - 16.6%, threatened miscarriage - 16.7%, threatened preterm birth - 17.3%, placental insufficiency - in 34 (22.6%) pregnant women.

Attention was drawn to the high frequency of hypertensive disorders during pregnancy in patients of group I. Thus, the frequency of arterial hypertension associated with pregnancy was 2.7 times higher than in the control group, moderate preeclampsia - 2 times, in 3 (1.9%) patients of group I, the development of severe preeclampsia was noted, which led to delivery by caesarean section due to premature detachment of a normally located placenta in one

patients, 2 (1.3%) were operated on due to aggravation of the condition of pregnant women and critical conditions of the fetus. Induction of labor activity (Glandin E) due to pregnancy overdose and immaturity of the birth canal was performed in 15 patients, which was 14.9%. Of these, 5 (33.3%) pregnant women were operated on in a planned manner due to the ineffectiveness of induction, and 4 (26%) pregnant women were operated on an emergency basis due to the development of a deterioration in the intrauterine state of the fetus. In the control group, pre-induction of labor was performed 5 (3.3

%) pregnant women, all had conservative births. The average number of bed-days spent in the hospital during pregnancy was 5.6 bed/day in patients in the control group and 13.2 bed/day in patients with adenomyosis. In 43 (28%) pregnant women of group I, the onset of labor was preceded by a pathological preliminary period, in 23 (15%) - premature rupture of the membranes (control group - 7.3% and 4.7%). In childbirth, primary weakness of labor activity was noted in 32 (20.9%) women in labor, secondary - in 12 (7.8%), discoordination of labor activity, including non-curable use of prolonged epidural

anesthesia, in 18 (11.7%) women in labor. Acute and progressive chronic intranatal hypoxia in the fetus was an indication for emergency caesarean section in 30 (19.6%) patients. In the control group, complications were significantly less common ($p < 0.05$), and corresponded to the standard general population frequency of pathology of the birth act.

As a result of the increased frequency of pregnancy and childbirth complications, the proportion of emergency caesarean sections in the main clinical group exceeded this indicator in the control group by 5 times, amounting to 30.3% versus 6.0% in the control group ($p < 0.05$). The rate of planned caesarean sections did not differ between groups (10.5% — group I, 10.0% — group II) ($p < 0.05$).

Among the complications of the postpartum period in puerperas of group I, there was a high incidence of hypotonic bleeding in the early postpartum period of 7.8% (12 patients) and a hematometer - 17% (26 patients) against the control group (2% (3 patients) and 3.3% (5 patients), respectively ($p < 0.05$). A significant ($p < 0.05$), 5 times higher than the general population indicator and the indicator of the control group, the frequency of dense attachment of the placenta was noteworthy - 5.2% (8 patients). , in the group of pregnant women with adenomyosis, 1 case (0.7%) of "placenta accreta" was noted, which ended with metroplasty of the site of true placental accretion. Subinvolution of the uterus was diagnosed in group I in 3.9% (6 patients), lochiometer - 7.8 % (12 patients) versus 2 (3 patients) and 0.7 (1 patients), respectively, in the II control group.

A high percentage of postpartum complications led to an increase in the length of stay in the hospital in the postpartum period by 2 times (7.2 k/d in group I and 3.4 k/d in group II). The average assessment of the state of the fetus on the Apgar scale (points) in the main and control groups was 6.8 ± 0.9 points and 7.8 ± 1.2 points in group I and 7.8 ± 0.2 points and 8.9 ± 1.5 in group II. The average height and weight indicators did not differ significantly ($p > 0.1$), however, in the group of newborns born from mothers of group I, malnutrition occurred 3 times more often, and the number of births with a large fetus increased by 2 times. The detection of intrauterine infection exceeded this indicator in the control group by 3 times, hyperbilirubinemia in the early neonatal period in group I was 2 times more common than in the control group.

Thus, the data of this study, in pregnant patients with grade 1 and 2 adenomyosis in the absence of problems with conception and somatic pathology, the number of early reproductive losses and premature births significantly increases ($p < 0.05$), placental insufficiency is statistically significantly more common during pregnancy. with hemodynamic disorders in the mother-placenta-fetus system and intrauterine growth retardation ($p < 0.05$). The frequency of hypertension disorders that occurred during pregnancy, including moderate and severe preeclampsia, increases by almost 3 times. In pregnant women with adenomyosis, the frequency of pathology of labor and the postpartum period significantly increases ($p < 0.05$), mainly associated with increased blood loss (bleeding of the postpartum period, hematometer). And, as a result, the number of bed-days spent in the hospital during pregnancy and after delivery is 3 times higher than in healthy women.

Complications of gestation, pathology of labor and the postpartum period in patients, even with stage 1 of the spread of adenomyosis, are largely associated with the structural features of the endometrium-myometrium transition zone. In support of the theory of the formation of adenomyosis as a consequence of direct invasion of the endometrium into the myometrium, our previous studies [13] proved that in adenomyosis, regardless of the degree of its spread, the endometrium has an increased ability to proliferate, and an amorphous substance predominates in the layer of the inner myometrium, and the myometrium the transition zone due to increased proliferative activity is prone to hyperplasia as the invasion of endometrial foci. This is accompanied by a proinflammatory, proangiogenic status of the system of cytokines and growth factors in the endometrium of the "transitional zone" and in the cervical mucus, even with grade 1 adenomyosis. These disorders in the area of remodeling of the spiral arterioles, possibly

and lead to their abnormal transformation in the area of formation of primary, secondary and tertiary chorionic villi, to defective differentiation of connective tissue structures, the vascular network, and to untimely regressive processes in the epithelial cover of the placenta, which ultimately causes most of the above obstetric complications.

Conclusions:

Thus, women with adenomyosis are characterized by an increase in the frequency of reproductive losses, complications of the gestational process, childbirth and the postpartum period, which necessitates the detection and timely correction of this pathology even at early stages in the complex of pre-gravid preparation.

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