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Analysis Of The Frequency And Structure Of Obstetric And Perinatal Complications In Women With Adenomyosis

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Abstract: The above allows us to conclude that women of reproductive age with endometriosis need a special approach to planning and managing pregnancy, as well as those who, due to endometriosis-associated infertility, make numerous and unsuccessful attempts to become pregnant. The aim of the study was to analyze the frequency and structure of obstetric and perinatal complications in women with adenomyosis. The frequency and structure of obstetric and perinatal complications were determined in 103 women with various forms of adenomyosis. The structure of obstetric complications: spontaneous miscarriages, very early and early premature births, premature births, placental dysfunction, hypertensive disorders; placenta previa and abnormal placental attachment, as well as bleeding in the postpartum period and subinvolution of the uterus ($p<0,05$). We have found that the odds and risks of developing obstetric and perinatal complications are significantly increased in pregnant women with adenomyosis.

Keywords: Adenomyosis, obstetric complications, odds ratio, risk ratio.

Introduction: The WHO recognizes the significance of endometriosis and its negative impact on women's reproductive health, quality of life, and overall well-being [4]. Endometriosis affects approximately 10-15% of women of reproductive age worldwide (WHO 2021), with up to 50% of these women diagnosed with infertility. WHO estimates (WHO, 2023) that at least 190 million women and adolescent girls worldwide currently suffer from this condition during their reproductive years, although some women may suffer after menopause [1,6,7]. Addressing these issues is currently the primary focus of efforts to combat endometriosis [2,9].

Researchers attribute the high prevalence of endometriosis and its prevalence in gynecological pathology to the complex, multicomponent pathogenesis of the disease, which encompasses disturbances at the molecular, cellular, genetic, and epigenetic levels [3,5,8].

In connection with the above, an in-depth study and comprehensive assessment of possible epigenetic factors in the development of obstetric and perinatal complications in women with adenomyosis will allow us to develop and scientifically substantiate a method for pre-pregnancy preparation of women with adenomyosis and a method for predicting obstetric and perinatal complications at the preclinical stage.

METHODS

To determine the frequency and pattern of obstetric and perinatal complications in 103 women with various forms of adenomyosis aged 25 to 35 years (mean age 29.6 ± 4.2 years) a comparative prospective study was conducted examining clinical and anamnestic data depending on the form of pathology. Depending on the form of adenomyosis, the women were divided into groups: Group 1 consisted of 82 women with diffuse adenomyosis, Group 2 consisted of 21 women with focal adenomyosis. A total of 112 women without

adenomyosis in a similar age range served as controls.

RESULTS

The mean age between the groups did not differ and was 29.6±4.2 years. However, among patients with grade III diffuse adenomyosis, women aged 35 years and older were predominant (p<0.05).

The women examined in all groups were primarily aged 27 to 35 years. This is likely due to the selection criteria for pregnant women (p>0.05).

In patients with adenomyosis in groups 1 and 2, the mean age at menarche was 13.6±1.2 years and 13.2±1.5 years, respectively, which did not differ significantly from the same indicator in the control group (13.4±1.1), (p>0.05).

It was noteworthy that the duration of the menstrual cycle in groups 1 and 2 was 25.7 ± 3.2 days and 24.6 ± 3.4, respectively, which was statistically significant compared to the control group of 28.5 ± 1.2 days (p> 0.05).

In patients with adenomyosis, a statistically significant difference was found in the duration of menstrual bleeding (8.4 ± 1.2 days and 6.9 ± 3.4 days compared to the control group of 4.6 ± 0.7 days) (p < 0.05). Moreover, in the group of women with focal adenomyosis, 34 (41.5%) and in the group of women with diffuse adenomyosis, 9 (42.8%) patients stated that they had been experiencing this duration of menstrual bleeding since menarche.

Besides infertility, the most common complaint presented by patients in the main clinical group was dysmenorrhea (a cyclical pathological process characterized by aching pain in the lower abdomen 2 to 5 days before the onset of menstruation and severe pain during menstruation). Dysmenorrhea of varying severity was present in 18 (85.7%) patients with focal adenomyosis and in 100% of patients with diffuse adenomyosis. In the control group, the incidence was only 10.7%, mainly due to mild dysmenorrhea.

A study of the obstetric histories of women with adenomyosis revealed that artificial abortions were performed by patients in all clinical groups. Among 103 patients with adenomyosis, 52 patients (50.5%) had one artificial abortion; 19 patients (18.5%) had two artificial abortions; 23 patients (22.3%) had more than two abortions. An analysis of the abortion rate in the group of women without adenomyosis revealed a lower rate (37.5%), which was statistically significantly lower than in the group with adenomyosis.

The total number of reproductive losses consisted of spontaneous miscarriages, non-viable pregnancies, antenatal deaths, and very early and early preterm births resulting in early neonatal mortality. Spontaneous pregnancy loss in patients with adenomyosis was observed in 24 patients, representing a 23.3% rate and 2.4 times higher than in the control group (9.8%). This is likely due to disruptions in implantation and placentation processes associated with adenomyosis, a finding confirmed by other researchers.

An analysis of the non-viable pregnancy rate in the study groups revealed that the rates did not differ significantly between the study groups. For example, in the group of women with adenomyosis, non-viable pregnancy was observed in 10.7%, while in the group of women without adenomyosis, this rate was 8.0%, which was only 1.3 times lower. However, no statistically significant difference in the non-viable pregnancy rate was found between the groups, meaning there is no correlation between the non-viable pregnancy rate and the presence of adenomyosis.

A comparative analysis of the course and outcomes of previous pregnancies and births revealed that the live birth rate was 96.1% in the group of patients with adenomyosis, while in the control group this figure was higher, at 98.2% (Table 3.7).

The most common complications of the second half of pregnancy were very early and early preterm births, the incidence of which in the group of women with adenomyosis was 13.6%, which is 15.1 times higher than in the group of women without adenomyosis. There were no very early preterm births in the control group, and only one patient (0.9%) had an early preterm birth at 28-29 weeks of gestation. As a result, the incidence of premature birth was 24.3% in the group of pregnant women with adenomyosis, which is 4.5 times more common than in women without adenomyosis (5.4%), while two (1.8%) pregnant women without adenomyosis underwent emergency surgery at 32-34 weeks due to premature detachment of a normally located placenta, 1 (0.9%) patient - due to severe preeclampsia and 2 (1.8%) - due to an inconclusive condition of the fetus (critical reverse blood flow).

Pregnant women with adenomyosis had a history of significantly high frequency (31.1%) (p<0.05) of placental dysfunction (according to women's reports, Doppler ultrasound revealed varying degrees of MPPC abnormalities) and hypertensive disorders – 27.2%. The rate of placental dysfunction in the group of women without adenomyosis was 13.4%, which is 2.5 times lower than in the group of women with adenomyosis. The frequency of hypertensive disorders in the comparison group of women without adenomyosis was much lower (2.5 times) and

amounted to 10.7%. It is well known that one of the outcomes of placental dysfunction is PORP, which was noted in 4.9% of women with adenomyosis. In the group of women without adenomyosis, this pathology was not observed in the history. Serious pregnancy complications such as placenta previa and placenta previa were observed in 5.8% and 7.8% of women with adenomyosis, respectively. In the control group of women without adenomyosis, these rates were 1.8% and 2.7%, respectively, representing 3.2 and 2.9 times higher rates.

A study of the labor history of women with adenomyosis revealed a higher incidence of complications, such as prelabor rupture of membranes, labor abnormalities, and postpartum hemorrhage. For example, in the group of women with adenomyosis, a history of labor weakness was noted in 12 (11.7%) women, compared to 8 (7.1%) women in the comparison group of women without adenomyosis, representing 1.6 times lower rates. The incidence of prelabor rupture of membranes was non-significant between the groups, at 9.7% and 14.3%, respectively. Fetal distress was an indication for emergency cesarean section in 9 (8.7%) patients with adenomyosis and in 5.4% of women without adenomyosis, which is 1.6 times less common ($p<0.05$).

A significant incidence of placental accreta was noted – 6.8% ($p<0.05$), 3.7 times higher than the general population rate and the control group rate (1.8%). Also, in the group of women with adenomyosis, one case (0.97%) of "placenta increta" was observed, resulting in removal of the site of true placenta accreta and metroplasty.

Among the early postpartum complications, women with adenomyosis had a high incidence of hypotonic bleeding in the early postpartum period (12.6%) compared to controls. In the group of women without adenomyosis, the incidence was 6.3% ($p<0.05$). Uterine subinvolution was diagnosed in 24.3% of women with adenomyosis, while in the control group, it was observed less frequently, at 11.6%, or 2.1 times less frequently.

To identify the causal relationship between the presence of adenomyosis and the development of obstetric and perinatal complications, we calculated the odds (OR) and risk (RR) of their occurrence in these patients (Table 1).

The analysis showed that pregnant women with adenomyosis experienced complicated gestation, which, to a certain extent, was the cause of obstetric and perinatal complications.

An analysis of complications in the first half of pregnancy showed that women with adenomyosis had a 2.8-fold and 2.4-fold higher risk of spontaneous miscarriage, respectively. The odds and risks of nonviable pregnancy with adenomyosis were low, with an OR of 1.3 and a RR of 1.4.

PD was observed in 31.1% of women with adenomyosis. The odds and risks of nonviable pregnancy in pregnant women with adenomyosis were 2.9 and 2.5 times higher than in women without adenomyosis.

Table 1

Risk and odds of developing obstetric and perinatal complications in women with adenomyosis (OR and RR)

Obstetric complications	OR	RR
Spontaneous miscarriages	2,8	2,4
Non-viable pregnancy	1,3	1,4
Very early and early preterm labor	17,5	15,6
Preterm labor	2,6	2,2
Placental dysfunction	2,9	2,4
Hypertensive disorders	3,1	2,5
Fetal growth retardation syndrome	5,7	5,6
PA	3,4	3,0
Placenta previa	3,1	2,7
Antenatal fetal death	1,8	2,1
Abnormal placental insertion	4,0	3,5
Caesarean section	2,0	1,7
Reproductive losses	4,7	3,6
Peripartum hemorrhage	2,2	2,1
Uterine subinvolution	2,4	2,0

It should be noted that, apparently as a result of the PD, a certain number of pregnant women in the study group developed hypertensive disorders. For example, in the group with adenomyosis, the odds ratio (OR) of developing hypertensive disorders in pregnant women was 3.1 times higher than in the control group. The risk ratio (RR) of developing hypertensive disorders in pregnant women with adenomyosis was 2.5 times higher than in the group of women without adenomyosis.

One pregnancy complication that is difficult to treat is uterine prolapse (UP). The odds ratio (OR) of developing UP in pregnant women with adenomyosis was 5.7 times higher, and the risk ratio (RR) was 5.6 times higher than in the group of women without adenomyosis.

Other serious gestational complications, such as placenta previa and placenta previa, were rare in both groups but were comparatively more common in the group of pregnant women with adenomyosis (5.8% and 7.8%, respectively). This, in turn, affected the odds and risk ratios for developing these complications in adenomyosis. Thus, the odds and risk of developing placenta previa in adenomyosis were 3.4 and 3.0 times higher (OR=3.4; RR=3.0) than in women without this pathology. Apparently, this is due to impaired implantation and placentation in the early stages of pregnancy in adenomyosis. The odds and risk of developing placenta previa in women with adenomyosis were 3.1 and 2.7 times higher (OR=3.1; RR=2.7). The reason for this is apparently the impossibility of placentation in the upper parts of the uterus due to adenomyosis. A similar mechanism can be considered abnormal placental attachment, the chance of developing which in women with adenomyosis is 4.0 times higher, the risk of developing it is 3.5 times higher (OR=4.0; RR=3.5).

Notably, the odds and risks of very preterm and early preterm birth were high in women with adenomyosis (OR=17.5; RR=15.6). However, the odds ratio and risk of preterm birth at 34-37 weeks in women with adenomyosis were lower (OR=2.6; RR=2.2).

Reproductive losses, including spontaneous abortions, non-viable pregnancies, antenatal death, and very preterm and early preterm births resulting in early neonatal mortality, were higher in the group of women with adenomyosis. Calculation of the odds and risks of reproductive losses in adenomyosis revealed higher rates, OR=4.7 and RR=3.6. A study of the postpartum period revealed relatively high rates of postpartum hemorrhage in women with adenomyosis (12.6%), which resulted in a 2.2- and 2.0-fold increase in the odds ratio (OR) and risk factor (RR), respectively. According to published data, this is associated with impaired uterine contractility in adenomyosis, especially in the diffuse form. Impaired contractility may also have contributed to the higher incidence of uterine subinvolution in women with adenomyosis (24.3%). The odds ratio (OR) and risk factor (RR) for developing uterine subinvolution in women with adenomyosis are 2.4 and 2.0 times higher than in women without adenomyosis.

Thus, we have found that the odds and risks of developing obstetric and perinatal complications are significantly increased in pregnant women with adenomyosis.

CONCLUSIONS

Thus, the chances and relative risk of developing obstetric complications are high in women with adenomyosis, the structure of which consisted of: spontaneous miscarriages (OR=2.8; RR=2.4), very early and early premature births (OR=17.5; RR=15.6), premature births (OR=2.6; RR=2.2), placental dysfunction (OR=2.9; RR=2.4), hypertensive disorders (OR=3.1; RR=2.5); SORP (OR=5.7; RR=5.6), placenta previa (OR=3.1; RR=2.7) and abnormal placental attachment (OR=4.0; RR=3.5), as well as bleeding in the postpartum period (OR=2.2; RR=2.1) and subinvolution of the uterus (OR=2.4; RR=2.0).

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