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Original Article

Analysis of Pregnancy Characteristics and Perinatal Outcome of Mediastinal Uterus in China

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Abstract

Background: To analyze the complications and outcome of mediastinal uterine pregnancy, and put forward targeted prevention and treatment measures.

Methods: A total of 248 pregnant women with mediastinal uterus treated were enrolled from Jan 2015 to Dec 2018 in the Maternal and Child Health Hospital of Hubei Province, China. The data, including complications of pregnancy, gestational weeks, mode of delivery, postpartum hemorrhage, placental condition and perinatal prognosis, were collected and analyzed.

Results: There were 12 cases with abnormal fetal position in the previous cesarean section. The total number of cases with abnormal fetal position was 99(49.75%). For women with abnormal fetal position during mediastinal uterine pregnancy, there was a significant increase in the incidence of placental abruption ($P<0.05$). The average gestational age at termination of pregnancy was 37^{+5}weeks. There were 55 cases (22.18%) of premature and 49 cases (19.75%) of premature rupture of membranes, including 29 cases of abnormal fetal position and premature rupture of membranes, mediastinal uterus preterm birth, premature rupture of membranes ($P<0.05$). There were 13 cases (5.24%) of postpartum hemorrhage, natural birth without neonatal asphyxia, five cases (2.02%) of neonatal asphyxia, preterm birth, and 51 cases (20.56%) of placental adhesion. Of these, 37 cases were cesarean, 13 were spontaneous production, and 71 were fetal umbilical cord winding.

Conclusion: The pregnancy induced spontaneous abortion, premature delivery, premature rupture of membranes and abnormal fetal position in mediastinal uterus are significantly higher than normal pregnancy. The complications during delivery are significantly higher than in normal pregnant women.

Keywords: Mediastinal uterine malformation; Uterine pregnancy outcome

Introduction

The formation of uterus takes complicated steps such as development, convergence, synthesis, cavity formation, fusion of septum and myometrium (1). Mediastinal uterus is caused by the absorption of the septum after the confluence of the two sides of the Müller canal (2). The uterine appearance is normal, the mediastinum runs through the whole uterine cavity and cervix, and the uterus is divided into complete mediastinum and incomplete mediastinum (3). The mediastinum, which begins at the bottom of the uterus separates part of the uterine cavity, is incomplete mediastinum (4). The incidence of mediastinal uterus is 0.1%~0.98%, which is the most com-

mon uterine malformation, accounting for 80% of the deformed uterus (5).

The complications during pregnancy and delivery of mediastinal uterine uterus were significantly higher than that of normal uterus (6), and the gestational weeks and delivery modes of termination of pregnancy were different from those of normal uterine pregnancy (7).

We retrospectively analyzed 248 pregnant women with confirmed mediastinal uterus to explore the complications and pregnancy outcome of mediastinal uterus pregnancy, and we provide a theoretical basis for the management of mediastinal uterus complicated with pregnancy.

Materials and Methods

Subjects

A total of 248 pregnant women with mediastinal uterine malformation were enrolled from Jan 2015 to Dec 2018 in the Maternal and Child Health Hospital of Hubei Province, China. Inclusion criteria: 1) mediastinal uterus meets the classification criteria of the American Society of Reproductive Medicine, and confirmed by the grade 3A hospital with pre-pregnancy gynecological examination, B ultrasound, hysteroscopy, laparoscopy or cesarean section; 2) the information, including examination and delivery, is complete. Finally, 248 cases of pregnancy with mediastinum were included in the malformation group. According to age, number of births, mode of conception (natural pregnancy or ovulation promotion or assisted fertility technology, etc.), 260 cases of normal pregnant women without uterine malformation were included with the ratio of 1:1.

This retrospective study was approved by the Ethics Committee of the Maternal and Child Health Hospital of Hubei Province, and all subjects provided the written informed consent.

Data collection

The information, including complications during pregnancy, delivery week, delivery mode, postpartum hemorrhage, placenta during delivery and perinatal prognosis were collected and analyzed.

Statistical analysis

SPSS24.0 (Chicago, IL, USA) software was used for statistical analysis. Counting data were represented by number and percentage. X^2 test was used to compare the differences between the two groups. $P<0.05$ was considered to be significantly different.

Results

The general information

A total of 248 cases of mediastinal uterus were finally included (Table 1). There were 491 pregnancies, including 92(18.73%) spontaneous abortions, 116(46.77%) uterine deformities, 58(23.38%) uterine deformities and 74(29.83%) uterine deformities.

There were 49 cases (19.75%) with complications, including 6 cases of stillbirth and 5 cases of fetal malformation induced labor. The pregnancy complications, mode of delivery, delivery time and normal uterine pregnancy in the mediastinal uterine and control groups are shown in Table 1.

Table 1: Comparison of pregnancy complications, mode of delivery, delivery time and normal uterine pregnancy in longitudinal septum

Groups	*Number of cases*	*Abortion Number of times*	*Fetal membrane Early break*	*Fetal position Abnormalities*	*Placenta Early exploitation*	*Cord winding*	*Placenta Adhesion*	*Postnatal Bleeding*	*Caesarean section Yields*
Mediastinal uterine group	248	92	49	89	15	71	51	13	80.24%
Control group	260	30*	36*	13*	3*	42*	23*	11	45.6%*

Compared with the mediastinal group * $P<0.05$

Fetal growth restriction, gestational hypertension, twin and gestational diabetes mellitus were 1.01%. One case (0.50%) after uterine leiomyoma removal, 1 case each of precious fetus and persistent occipital posterior position, Among them, 12 cases with abnormal fetal position in the previous cesarean section. The total number of cases with abnormal fetal position during mediastinal uterine pregnancy was 99(49.75%), with high incidence of placental abruption (P<0.05).

Average gestational weeks

The termination of pregnancy was 37^{+5}weeks, of which 55 were premature (22.18%). There were 49 cases (19.75%) of premature rupture of membranes, including 29 cases of abnormal fetal position and premature rupture of membranes, mediastinal uterus preterm birth, premature rupture of membranes (P<0.05) (Table 2).

Table 2: Comparison of Perinatal Outcome of Longitudinal and Normal Uterine Pregnancy

Group	*Number*	*Average gestational weeks*	*Premature birth*	*Neonatal asphyxia*
Mediastinal uterine group	248	37 weeks + 5 days	55	5
Control group	260	38 weeks + 6 days	19*	4

*P<0.05

Complications

There were 5.24% of postpartum hemorrhage, natural birth without neonatal asphyxia, 2.02% of neonatal asphyxia, preterm birth, 20.56% of placental adhesion. Of these, 37 were cesarean, 13 were spontaneous production, 71 were fetal umbilical cord winding. Pregnancy with mediastinal uterine umbilical cord winding and placental adhesion increased significantly (P<0.05) (Table 2).

Discussion

The incidence of mediastinal uterus complicated with pregnancy in our hospital was 0.26%. Repeated spontaneous abortion is the most common complaint in patients with mediastinal uterus (8). About one-third of the patients with habitual abortions have mediastinal uterus, and most of them occur early in pregnancy. The results showed that the total number of pregnancies in 248 cases of mediastinal uterus was 491, 92 spontaneous abortions, The rate of spontaneous abortion was 18.73 percent, Many pregnant women do not have a reproductive system check before pregnancy, And so on abortion or adverse pregnancy outcome after the discovery of genital malformation, This study showed that 248 cases of uterine malformation were found before pregnancy in mediastinal uterus (23.38%), 116 cases (46.77%) of uterine malformations were found during pregnancy, There were 74 cases (29.83%) of uterine malformation, The lowest percentage of mediastinal uterus was found before pregnancy, Therefore, married women of childbearing age should pay attention to pre-pregnancy examination, In order to detect uterine abnormalities before pregnancy, Strengthen monitoring during pregnancy.

This study showed that the complications of mediastinal uterine abortion, premature delivery, abnormal fetal position, umbilical cord winding, premature rupture of membranes, and the incidence of placental abruption in late pregnancy were significantly higher than that in normal uterine pregnancy. Mediastinal uterus due to abnormal uterine structure or accompanied by endometrial dysplasia, pregnant egg implantation in the underdeveloped uterine wall or mediastinum, insufficient blood supply in the myometrium, reduced cervical connective tissue, narrow uterine cavity and irregular shape, increased intrauterine pressure during pregnancy, cervical weakness against the increase after pregnancy asymmetric uterine pressure can easily lead to relative cervical

insufficiency (9). The incidence of late abortion, premature delivery and premature rupture of membranes increased significantly and the incidence of abnormal fetal position increased. There was more preterm labor in mediastinal uterus 32 weeks ago than other types of uterine malformation, and other types of premature labor tend to be 34 weeks later. If the cervical canal is shortened, cervical ligation is performed if necessary. The incidence of premature rupture of membranes was significantly higher than that of normal pregnancy.

The incidence of fetal abnormality in mediastinal uterus was significantly higher than that of normal uterus, and the incidence of abnormal fetal position in pregnant women with uterine malformation was 38.8% according to the data (10). The incidence of abnormal fetal position was 49.75%, which is significantly higher than that of previous study (11), and the incidence of premature rupture of membranes associated with abnormal fetal position is 50%, which is significantly higher than that of head pregnant women (12).

This study showed that the incidence of placental abruption in the late pregnancy of mediastinal uterus was significantly higher than that of normal uterus. The incidence of placental abruption in 248 cases of mediastinal uterus was 6.05%, which was significantly higher than that of normal. The high incidence of placental abruption in mediastinal uterus caused by uterine malformation decreased uterine volume, loss of normal shape, reduced muscular layer, incomplete muscle development, poor muscle walls tension and small dilatation, which resulted in the symmetry and polarity of contraction and poor blood supply (13). In the course of perinatal health care, pregnant women with mediastinal uterus complicated with pregnancy should be advised to seek medical attention in time if abdominal pain and vaginal bleeding occur.

A total of 37 weeks and 5 days of gestation were observed for pregnant women with mediastinal uterus, and the rate of cesarean section was significantly higher for pregnant women with mediastinal uterus and pregnancy. Most patients with mediastinal uterus terminate pregnancy by cesarean section (14). The rate of cesarean section was 82.03%, among which abnormal cesarean section was the most common indication. The choice of uterine incision is very important. In the third trimester, the uterus is often left or right-handed, the lower segment of the uterus is not exposed clearly, and sometimes the appendages have been rotated to the abdominal incision.

The incidence of placental adhesion and umbilical cord winding in pregnant women with mediastinal uterus during delivery was also significantly higher than that of normal (15). Prepare for bleeding during delivery and reduce postpartum hemorrhage. The incidence of umbilical cord winding in mediastinal uterus may be related to the narrow uterine cavity and the limited fetal activity space. In the third trimester, it is important for pregnant women to monitor their abnormal fetal movements and avoid adverse pregnancy outcomes.

Mediastinal uterus with pregnancy mother and child pregnancy complications, so we should find the uterus mediastinum as soon as possible, in pregnancy should strengthen pregnancy health care, close monitoring during delivery, pay attention to surgical skills, reduce the occurrence of maternal and child complications.

Conclusion

The spontaneous abortion, premature delivery, premature rupture of membranes and abnormal fetal position of mediastinal uterine pregnancy were significantly higher than those of normal pregnancy. Additionally, the complications of mediastinal uterine pregnancy during delivery were significantly higher than those of normal pregnancy.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Conflict of interest

The authors declare that there is no conflict of interest.

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