Original Article

Evaluation of Pregnancy Outcomes in Iranian Women with Uterine Myomas

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Abstract

Background: To investigate the impacts of myomas on the outcomes of pregnancy in Iranian pregnant women with uterine fibroids.

Materials and Methods: In this retrospective cohort study, the consequences of myomas on pregnancy were investigated in Iranian pregnant women referred to the perinatology clinic of Mahdieh Hospital (Tehran, Iran). One-hundred and sixty pregnant women diagnosed with uterine myoma were enrolled in the study as the case group. The control group consisted of 160 pregnant women without fibroma. The characteristics of the myomas and their relationships with pregnancy outcomes were surveyed.

Results: Non-cephalic presentation, preterm labor, and Cesarean delivery were significantly higher in the case group in comparison with the control group. 106 patients (66.7%) had myomas larger than 5 cm in diameter. Intramural fibroids were seen in 132 (83%) patients. In addition, 133 (83.6%) patients had myomas in the body (corpus) of the uterus. Considering the number of myomas, 124 (78%) patients revealed one myoma in uterus. Uterine myomas during pregnancy rendered an important risk factor for cesarean delivery, breech presentation, and preterm delivery. However, there were no significant correlations between uterine myomas and IUGR, premature membranes rupture, either abortion or bleeding in the first trimester, low birth weight, and severe postpartum bleeding.

Conclusion: Our results showed that the presence of myoma could modulate pregnancy outcomes. Our results can be useful in improving the quality of prenatal care and education.

Keywords: Uterine fibroids, Myoma, Pregnancy outcomes

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Introduction

Fibroids which occur in 20-60% of women in childbearing age are benign tumors of the smooth muscle of the uterus[1]. It is postulated; however, the actual incidence of fibroids is much higher as many patients remain asymptomatic and undiagnosed[2]. The prevalence of fibroids in pregnancy has been reported as 1.6% to 10.7 %. Higher incidences have been described in older and African-American women[3].

Several risk factors including advanced age, obesity, family history of uterine fibroids, hypertension and vitamin D deficiency have been described for uterine fibroids. Elevated progesterone and estrogen levels during pregnancy can increase uterine blood flow and the level of coupled gonadotropins modulating the risk of fibroids development[4, 5]. In symptomatic women, the most common presentation includes the pain resulted

from fibrillation degeneration. Other common symptoms include pelvic pain and vaginal bleeding[6]. Other complications associated with fibroids include abdominal pain, spontaneous abortion, fetal breech position, placental separation, premature rupture of the curtains, cesarean delivery, preterm delivery, severe postpartum hemorrhage and low-birth-weight[7, 8]. The mechanisms by which fibroids lead to undesirable pregnancy outcomes seem to be multifactorial which are not clearly understood.

Variabilities in the size, location, and type of fibroids make the survey on their impacts on pregnancy outcomes more difficult. Approximately 10% to 30% of women with uterine fibroids experience adverse complications during pregnancy[9]. However, the reports on these adverse effects have been limited due to selection bias, small and heterogeneous populations, variable inclusion criteria, the low occurrence of adverse outcomes, and inadequate controlling on confounding variables. Therefore, there have been inconsistent reports on the relationships between fibroids and adverse obstetric outcomes. Although decreased extensibility and mechanical obstruction of uterine may partly explain the pathogenesis of some adverse outcomes, the precise mechanisms by which uterine fibroids induce obstetric complications are obscure. So far, there are a few comprehensive studies on the fibroids associated with obstetric complications and their associations with pregnancy outcomes in Iranian women. This study aimed to investigate the impacts of uterine fibroids on pregnancy outcomes and their relationships with myomas in Iranian women.

Methods

Study design and participants: In this retrospective cohort study, the consequences of myomas on pregnancy were investigated in pregnant women referred to the perinatology clinic of Mahdieh Hospital (Tehran, Iran). Of the 5800 women referred for maternity care to the hospital from 2010 to 2018, 784 were diagnosed with uterine fibroids. After excluding patients who did not fulfill the entry criteria, 160 pregnant women diagnosed with uterine myomas via ultrasound during the first trimester of pregnancy were enrolled in the study as the case group. The control group consisted of 160 pregnant women without fibroma who were matched for maternal age and the number of pregnancies and deliveries (Ethic number: Ir. Sbmu. Msp. Rec. 1397.673).

Inclusion and exclusion criteria: Inclusion criteria were the presence of at least one uterine myoma larger than 3 cm and singleton pregnancy. Exclusion criteria included histories of cesarean, myomectomy, removing the uterine septum, chronic uterine malfunction, cardiovascular or cerebrovascular diseases, diabetes, hypertension, kidney failure, hematological diseases, as well as the history of adverse outcomes (i.e. abortion, preterm labor, premature rupture of the curtains, intrauterine growth restriction (IUGR), intrauterine death, and placenta admission), ectopic pregnancies, embryonic uterine death, and embryonic anomalies.

Data collection: The pregnancy complications including spontaneous abortion, non-cephalic presentation, premature rupture of the membranes, preterm delivery, cesarean delivery, severe postpartum bleeding (>500 ml in normal labor and >1000 ml in cesarean delivery), bleeding during the first trimester, IUGR and low-birth-weight were recorded for all the patients. The features of the myomas (i.e. type, size, number, and location), as well as their relationships with pregnancy outcomes, were assessed. Either the Chi-square test or Fisher's exact test was used to examine the relationship between the nominal variables. The data were analyzed using SPSS (v. 20.0) software.

Results

Comparison of Pregnancy outcomes between the study groups: The outcomes of pregnancy in the two studied groups summarized in table 1. According to these results, there were significant differences between the case and control groups considering the distributions of non-cephalic presentation preterm delivery (30.8% vs. 10.7% respectively) and Cesarean delivery (59.7% vs. 18.8% respectively). In the case group, 17 and 32 patients had deliveries at <34 weeks and between 34 to 37th weeks respectively. In 70% of the cases, preterm delivery was triggered by the onset of spontaneous contractions. Other outcomes did not show statistically significant differences between the studied groups.

Characteristics of the myomas: According to the size, 106 (66.7%) and 53 (33.3%) patients had myomas with

Table 1: Comparison of Pregnancy outcomes between the studied groups.

Outcome	Study group		P-value
	Case; N=frequency (%)	Control; N=frequency (%)	
Spontaneous Abortion	8 (5 %)	5 (3.1 %)	0.66
Non-cephalic presentation	48 (30.2 %)	11 (7.2 %)	0.00*
Premature rupture of the membranes	10 (6.3 %)	14 (8.8%)	0.81
Preterm Delivery	49 (30.8%)	17 (10.7)	0.01*
Cesarean Delivery	95 (59.7%)	30 (18.8%)	0.00*
Severe Postpartum Bleeding	12 (7.5%)	6 (3.8%)	0.39
First Trimester Bleeding	11 (6.9%)	14 (8.8%)	0.56
IUGR	13 (8.2%)	17 (11.3%)	0.44
Low birth weight (less than 2500 grams)	24 (15.2%)	22 (14.3%)	0.76

*P value<0.05 considered significant

diameters of >5 cm and <5 cm respectively. In terms of the type of myomas, 132 (83%), 7 (4.4%), and 20 (12.6%) patients represented with intramural fibroids, subserosal myoma, and submucosal myoma respectively.

Considering the location, 133 (83.6%), 22 (13.8%), and 4 (2.5%) patients revealed the myomas in the body (corpus), fundus, and the lower segment of the uterus respectively. Finally, 124 (78%), 30 (18.9%), and 5 (3.1%) patients had one, two and three myomas respectively.

Relationships between myomas features and pregnancy outcomes: There were significant associations between the size of myomas and spontaneous abortion (p=0.01), non-cephalic presentation (p=0.001), preterm delivery (p=0.001), Cesarean delivery (p=0.01), severe postpartum bleeding (p=0.01), and IUGR (p=0.001). In this regard, 87.5% of spontaneous abortions, 85.4% of non-cephalic presentations, 67.3% of preterm deliveries, 73.6% of Cesarean deliveries, 66.6% of severe postpartum bleedings, and 84.6% of IUGR cases occurred in women with myomas larger than 5 cm.

Significant relationships were found between the number of myomas and premature rupture of the membranes (p=0.03), preterm delivery (p=0.03), severe postpartum bleeding (p=0.001), and IUGR (p=0.02). Accordingly, 50% of the premature ruptures and all cases of severe postpartum bleeding and IUGR were encountered in patients with two or more myomas. On the other hand, 65.3% of preterm deliveries were observed in women with one myoma in their uterus.

According to the type of myomas, significant associations were identified with preterm (p=0.01) and Cesarean (p=0.04) deliveries. In this regard, intramural fibroids were diagnosed in 100% and 77.7% of cases with preterm and cesarean deliveries respectively.

Furthermore, there were significant relationships between the location of myomas and preterm (p=0.04) and Cesarean (p=0.02) deliveries. Accordingly, 97.9% and 78.9% of preterm and cesarean deliveries were seen in patients who had myomas in the body of their uterus here were no statistically significant relationships between the features of myomas and other pregnancy outcomes.

Discussion

Uterine fibroids have traditionally been considered as major contributors to adverse pregnancy outcomes. There are controversies about the impacts of fibroids on the outcomes of pregnancy before, either during or after delivery. The incidence of pregnancy complications such as spontaneous abortion, premature delivery, non-

cephalic presentation, and severe bleeding has been related to the presence of myomas[10]. In some studies, the impacts of the size, number, and location of myomas have been shown on pregnancy outcomes[11].

Based on our results, uterine myomas during pregnancy were important risk factors for cesarean and preterm deliveries, as well as breech presentation. Nevertheless, no significant associations were detected between uterine myomas and IUGR, premature rupture of membranes, abortion and bleeding during the first trimester, low birth weight, and severe postpartum bleeding.

In a study conducted by Coronado et al., preterm delivery was more frequently observed in women with uterine fibroids[12]. Nevertheless, Maryam Hashemnejad et al in Iran[13] did not report any significant relationship between preterm delivery and uterine fibroids. Furthermore, we observed a higher incidence of premature delivery in women with large (> 5 cm diameter) fibroids. This observation can be partly explained by the lower potential for dislocation and higher susceptibility for irregular contractions in the uterine affected with myomas. Furthermore, it has been noted that reduced activity of oxytocinase enzyme in the urethra can lead to an elevated level of oxytocin and subsequently the early onset of contractions in women with uterus myomas.

In the present study, the prevalence of cesarean delivery was significantly higher in women who suffered from large (i.e. > 5 cm diameter) intramural myomas than those without fibroma (59.7% vs. 18.8% respectively). This observation was consistent with the findings of Hashemnejad et al[13].

Conclusion

Our results showed that the presence of uterine myomas could affect some pregnancy-related outcomes. Our results can be useful for improving the quality of prenatal care and education. It is recommended to provide necessary measures (e.g. possible preterm or cesarean deliveries) for pregnant women with uterine myomas. Further studies are needed to provide definite and credible results.

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