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A Study on Obstetric and Perinatal Outcomes in Women ≥ 40 Years of Age

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Abstract: ***Objective: The aim of this study was to evaluate the effect of maternal age on prenatal and obstetric outcome in women ≥ 40 years of age. Materials and Methods: A prospective study for women delivered at gestational ages of >20 weeks in Umaid hospital Jodhpur between July2018 and June2019. We study 100 women aged 40 or above at the time of delivery. Results: The mean age of women in the study group was 41.2 ± 1.7 years. Advanced maternal age was associated with a significantly higher rate of hypertension, diabetes mellitus, fetal complication, and 5-minute Apgar scores <7. Caesarean section rate, incidence of placental abruption, preterm delivery, and neonatal intensive care unit admission were higher in the older mothers aged 40 and older. Conclusions: Advanced maternal age is related to maternal and neonatal complications. Pregnancy in older women seems to have higher rates of obstetric complications and adverse birth outcomes, such as hypertension, diabetes, and lower Apgar scores. Women should be informed that the risk of pregnancy complications and adverse birth outcome increases with age.***

Keywords: PIH: Pregnancy-induced hypertension, HDP: hypertensive disorders of pregnancy, SGA: Small for gestational age, LGA: Large for gestational age, NICU: neonatal intensive care unit

1. Introduction

Many women increasingly delay pregnancy and childbirth into their fourth decade of life because of different reasons, such as delay in marriage, educational and professional reasons [1]. Some of them experience pregnancy unwillingly because of inappropriate use of contraceptive methods [2].

Advanced maternal age has been regarded as a risk factor for complications in pregnancy. The association between advanced maternal age and increased risk of chromosomal abnormalities and spontaneous abortion has been well documented in studies [3]. There are different publications in the literature on pregnancy outcomes of women aged 40 years or older. Some authors have reported that advanced maternal age has been associated with preterm delivery, low birth weight, perinatal mortality, and higher frequency of cesarean section [4]. But others have reported no obvious difference in the perinatal outcomes, obstetric outcomes, birth weight, Apgar score, and admission to neonatal intensive care unit between younger and older mothers. A systematic review stated that advanced aged mothers have an increased risk of stillbirth. The mechanism of the increase in stillbirth risk with advanced maternal age is uncertain [5]. The aim of this study was to determine the effect of maternal age on obstetric and perinatal outcome in women aged 40 year and above.

2. Materials and Methods

This is a prospective study for women delivered at gestational ages of >20 weeks in Umaid hospital jodhpur between July2018 and June2019. We study 100 women aged 40 or above at the time of delivery. The following data, including maternal age at the time of delivery, gravidity, parity, gestational age, antenatal complications (pregnancy induced hypertension, diabetes, preterm delivery, delivery >20weeks, abruptio placenta, small for gestational age, large for gestational age), mode of delivery, indications for ceaserean sections, intrapartum, and neonatal outcome (fetal distress, fetal complication, fetal malformation, birth weight, Apgar score, neonatal intensive care unit admission, and stillbirth) taken for study. Maternal age was considered as the age at the time of delivery. Gestational age was determined on the basis of either date of last menstrual period or ultrasound examination. Diastolic blood pressure >90 mmHg was defined as hypertension in pregnancy (essential or pregnancy-induced hypertension). Diabetes mellitus was considered as history of diabetes (based on medical records) or gestational diabetes. Like other studies, we combined chronic hypertension, pregnancy-induced hypertension, and eclampsia into one condition called HDP (hypertensive disorders of pregnancy), and we combined gestational and established diabetes into another [6]. Abruptio placentae refer to the premature separation of the normally implanted placenta from the uterus. Preterm birth was defined delivery before 37 completed gestastional weeks. Small for gestational age (SGA) was defined as <10th percentile of birth weight for gestational age and large for gestational age (LGA) as ≥90th percentile. Stillbirth was defined as intrauterine death of a fetus weighing at least 500 g after 20 completed weeks of gestation. Low Apgar score was defined as a score of less than seven at 5 min following birth. Fetal complications include stillbirth, neonatal intensive care unit admission, and fetal malformation.

3. Results

We study 100 women aged 40 years or above. The mean age of women in the study group was 41.2±1.7 years at the time of delivery. The incidence of hypertension and diabetes mellitus was significantly higher. Abruptio placenta, preterm delivery, and LGA were higher. The infants of the older mothers showed a higher incidence of stillbirth (4), admission to the neonatal intensive care unit (4), and fetal malformation (3).

Table 1: Patients characteristics

	Study group (N:100)
Age(years)*	41.2 ± 1.7
Gravidity*	4.9 ± 2.5
Gestational age (weeks)*	37.8 ± 3.2

*Value are mean ± SD.

Table 2: Antenatal complications

	Study group (N: 100)
Hypertension	12
Diabetes mellitus	8
Abruptio placenta	5
Delivery <24 weeks	2
Preterm delivery	15
SGA	7
LGA	13

PIH: Pregnancy-induced hypertension, SGA: Small for gestational age, LGA: Large for gestational age.

Table 3: Fetal and neonatal outcome

	Study group (N: 100)
Stillbirth	5
NICU	5
Fetal malformation	3
Fetal complication	12
Fetal weight (gram)*	3190 ± 819
5-minute Apgar score <7	8

*Value are mean ± SD.

Table 4: Cesarean section indications

Indication	Study group (N : 64)
Previous cesarean section	32 (50)
Fetal distress	13 (20)
Peeclampsia	6 (9.3)
Malpresentation	2 (3.1)
Fetal macrosomy	8 (12.5)
Failure to progress	2 (3.1)
Previous myomectomy	1 (1.5)
Cord prolapse	1 (1.5)
Fetal anomaly	1 (1.5)

Data are presented (%). Some of the cases had more than 1 indication

Table 5: Maternal and neonatal complications in women aged >40 years

	Study group (N: 100)
Hypertension	12
Diabetes mellitus	8
Preterm delivery	15
Cesarean delivery	64
SGA	7
LGA	13
5 minute Apgar score <7	8
Intrauterine fetal death	5

Data are presented N (%)

The results showed that the rate of fetal complication 5-minute Apgar scores <7 were significantly higher. (Table 3). The cesarean section delivery rate was 64% in the study group. The repeat cesarean performed after the onset of labour, no programmed section was performed. The major indication for cesarean delivery in this study included previous cesarean section.

The incidence of cesarean section for fetal distress and fetal macrosomia was significantly higher (Table 4). The risk of hypertension, diabetes mellitus and 5 minute Apgar score <7 were higher.

4. Discussion

Our study confirms a significant higher incidence of hypertension and diabetes mellitus among pregnant women age 40 and older, which has been reported in other studies [7]. The prevalence of diabetes and hypertension are increased by age and considered to induce vascular endothelial damage that occurs with aging . The cesarean section was slightly higher in the older mothers aged 40 and older in Our study.

In this study, the incidence of placental abruption was higher in women aged 40 years or older.

The primary indication for cesarean section in this study was previous caesarean delivery.

Fetal distress constituted 20% of the indications for caesarean section. The rate of cesarean section for fetal macrosomia is accounted for 12.5% in the study group. This significantly higher rate of cesarean section may be related with diabetes mellitus which is clearly regarded as a cause of macrosomia [10].

Mean gestational age for the older group at delivery was significantly lower. This fact may be associated with maternal or fetal problems such as diabetes, chronic hypertension, and fetal distress [9] which is more frequently seen in older mothers.

The rate of stillbirth was higher. Stillbirth occurred in 5 cases in the study group in which down syndrome was the reason of death in one case. The rest of the patients did not accept the autopsy. The risks of aneuploidy and fatal congenital anomalies increase with maternal age and, despite antenatal screening, they are likely to have contributed to the increased rate of stillbirth [11]. The failure of uterine vasculature to adapt to the increased hemodynamic demands of pregnancy has also been suggested as a cause of fetal death in women aged 40 years and older [10].

This study shows that a 5-minute Apgar score <7, which is a better indicator of long-term neonatal outcome, was higher. Neonatal intensive care unit admission was more frequent. It may be explained by the increased incidence of fetal distress, with lower Apgar scores and fetal distress among older patients.

Advance maternal age was also a risk factor for preterm delivery in our study. Maternal and fetal complications such as hypertensive diseases, diabetes, and fetal distress may contribute to the increased risk of preterm delivery among the women aged 40 years and older [8].

In conclusion, pregnancy in older women seems to have higher rates of obstetric complications and adverse birth outcomes, such as hypertension, diabetes, and lower Apgar scores. Women should be informed that the risk of pregnancy complications and adverse birth outcome increases with age.

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