

Maternal & Perinatal Outcome of Mother with Gestational Diabetes Mellitus in Tertiary Care Hospital in Sylhet

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Abstract

Background: GDM is a high risk factor in pregnancy & is associated with an increased risk of complications for both mother & baby during pregnancy as well as in postpartum periods. Screening & identifying these high risk women is important to improve short & long term maternal & fetal outcomes. **Objective:** To determine the fetal & maternal outcome and complications in pt presenting with GDM. **Materials and Methods:** The present cross-sectional observational study was performed at the Department of Obstetrics and Gynecology of the Jalalabad Ragib Rabeya Medical College Hospital, from June, 2018 to November, 2019. One hundred women who are diagnosed to have GDM were included in this study. **Results:** Complication of the maternal outcome during antenatal periods that 32(32.0%) patients had H/O GDM, 19(19.0%) had preterm delivery, 19(19.0%) had postpartum UTI, 18(18.0%) had pre-eclampsia, 16(16.0%) had UTI, 14(14.0%) had vulvovaginitis, 13(13.0%) had cervical tear, 12(12.0%) had polyhydramnios, 11(11.0%) had PROM and 11(11.0%) had postpartum hemorrhage. Complication of the fetus outcome during antenatal period showed that 19(19.0%) babies were NICU admission followed by 12(12.0%) had hyperbilirubinemia, 8(8.0%) had neonatal hypoglycaemia, 6(6.0%) had respiratory distress infection, 6(6.0%) had congenital anomalies, 5(5.0%) had prematurity, 5(5.0%) had polycythemia and 4(4.0%) had birth asphyxia. **Conclusion:** Maternal and perinatal morbidity and mortality is increased in women with GDM. Infections, preterm delivery, postpartum UTI, pre-eclampsia, UTI, vulvovaginitis, cervical tear, polyhydramnios, PROM and postpartum hemorrhage were the common maternal complications. Fetal complications include NICU admission, hyperbilirubinemia, neonatal hypoglycaemia, respiratory distress infection, congenital anomalies, prematurity, polycythemia and birth asphyxia most common cause.

Keywords: Gestational diabetes mellitus, Macrosomia, Maternal outcome, Perinatal outcome.

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INTRODUCTION

Gestational Diabetes Mellitus (GDM) is glucose intolerance diagnosed for the first time in pregnancy. It may lead to potentially serious short term and long-term complications for both mother and fetus or newborn [1]. It is a common problem with prevalence varying from 2% to 22% of all pregnancies due to the use of different criteria for diagnosis [2]. GDM constitutes 90%–95% of all cases of diabetes seen in pregnant women [2]. GDM has increased risk for perinatal morbidity and markedly increased risk for type 2 diabetes. Perinatal risk in GDM is connected to uncontrolled glucose levels and GDM treatment may result in reduction of complications [3]. Independently of birth weight association of caesarean section deliveries in GDM is more than 35% compared to 20% in general population. Diagnosis of GDM alone leads to

easier decision for cesarean section delivery [4, 5]. Abnormal fetal growth, chemical imbalance and respiratory distress may result in admission of the newborn in ICU [6]. Fetuses exposed to higher levels of glucose in utero develop hyperinsulinemia, than reduced surfactant production, weak stabilization of alveoli during emporium and development of RDS [7]. There is increased risk of gestational hypertension, preeclampsia, and operative delivery and their associated potential morbidities in women with GDM [8].

More importantly, there is increased risk of developing type 2 diabetes mellitus (DM) in women diagnosed to have GDM with approximately 15% to 60% of them developing type 2 DM within 5 to 15 years of delivery. The Hyperglycemia and Adverse Pregnancy Outcome (HAPO) study was to ascertain

associations of maternal glucose levels lower than those diagnostics of overt diabetes during pregnancy with perinatal outcome.

MATERIALS AND METHODS

The present cross-sectional observational study was performed at the Department of Obstetrics and Gynecology of the Jalalabad Ragib Rabeya Medical College Hospital, from June, 2018 to November, 2019. One hundred women who are diagnosed to have GDM were included in this study. Baseline characteristic of women including age, body mass index (BMI), socioeconomic status, and religion was recorded. Diagnosis of GDM was made by GTT using 75 g glucose. Patient was labeled as GDM if any one value is more than criteria (fasting blood sugar [BS] ≥ 92 mg/dl, 1 h BS ≥ 180 mg/dl, and 2 h BS ≥ 153 mg/dl). Initially, patients were started on diabetic diet with some physical exercises. Diet was started by a dietician. If BS levels were not controlled on diabetic diet, then women were either started on oral hypoglycemic agent or insulin in collaboration with endocrinologist. The women received regular antenatal care. All antenatal investigations were performed. All women were screened for Down's syndrome using Level I ultrasound and dual screen followed by triple screen. Level II ultrasound (anomaly screen) was performed at 18–20 weeks in all patients. Any antenatal complications were noted and treated, particularly urinary tract infection (UTI), candidiasis, preeclampsia, polyhydramnios, etc. As a protocol, all patients with GDM on insulin were induced at 38 weeks, and those controlled on diet were induced at 40-week period of gestation.

RESULTS

Table-1 shows that majority (46.0%) patients belonged to age 26-30 years. The mean age was found 28.7 ± 4.7 years. Table-2 shows that more than half (54.0%) of the patients were primi para and 46(46.0%) were multi para. Table-3 shows that majority (81.0%) patients were term and 19(19.0%) were pre-term of the gestational age when GDM. Table-4 shows that more than three fourth (78.0%) patients were controlled on diet, 13(13.0%) treated insulin and 9(9.0%) treated oral hypoglycemic agents. Table-5 shows that more than half (55.0%) of the patients were cesarean section and 45(45.0%) were normal vaginal delivery. Table 6 shows that more than half (52.0%) babies were female, 5(5.0%) had low birth weight and 8(8.0%) babies were found in blood sugar < 2.6 mmol/L. Table-7 shows that 32(32.0%) patients had H/O GDM, 19(19.0%) had preterm delivery, 19(19.0%) had postpartum UTI, 18(18.0%) had pre-eclampsia, 16(16.0%) had UTI, 14(14.0%) had vulvovaginitis, 13(13.0%) had cervical tear, 12(12.0%) had polyhydramnios, 11(11.0%) had PROM and 11(11.0%) had postpartum hemorrhage. Table-8 shows that 19(19.0%) babies were NICU admission followed by 12(12.0%) had hyperbilirubinemia, 8(8.0%) had neonatal

hypoglycaemia, 6(6.0%) had respiratory distress infection, 6(6.0%) had congenital anomalies, 5(5.0%) had prematurity, 5(5.0%) had polycythemia and 4(4.0%) had birth asphyxia.

Table -1: Age distribution of the study pt (n=100)

Age (years)	Frequency	Percentage
≤ 20	7	7.0
21-25	32	32.0
26-30	46	46.0
31-35	14	14.0
> 35	1	1.0
Mean \pm SD	28.7 ± 4.7	

Table-2: Distribution of pt according to parity (n=100)

Parity	Frequency	Percentage
Primi	46	46.0
Multi	54	54.0

Table-3: Distribution of pt according to the gestational age when GDM was diagnosed (n=100)

Gestational age (weeks)	Frequency	Percentage
Pre-term (< 37 weeks)	19	19.0
Term (37-40 weeks)	81	81.0

Table-4: Distribution of pt according to the measures/ treatment of GDM (n=100)

Mode of treatment	Frequency	Percentage
Diet	78	78.0
Insulin	13	13.0
Oral hypoglycemic agents	9	9.0

Table-5: Distribution of pt according to the mode of delivery (n=100)

Mode of delivery	Frequency	Percentage
Vaginal	45	45.0
Cesarean section	55	55.0

Table-6: Distribution of pt according to the babies wt, sex, & blood sugar level at the time of delivery (n=100)

Parameter	Frequency	Percentage
Sex		
Male	48	48.0
Female	52	52.0
Weight (kg)		
< 2.5	5	5.0
2.5-4.0	95	95.0
Blood sugar (mmol/L)		
< 2.6	8	8.0
≥ 2.6	92	92.0

Table-7: Complication of the maternal outcome during antenatal periods, delivery & postpartum periods

Parameter	Frequency	Percentage
H/O abortion	8	8.0
H/O GDM	32	32.0
Gestational hypertension	10	10.0
UTI	16	16.0
Vulvovaginitis	14	14.0

Parameter	Frequency	Percentage
Respiratory infection	7	7.0
Pre-celapmsia	18	18.0
PROM	11	11.0
Polyhydramnios	12	12.0
Preterm delivery	19	19.0
Cervical tear	13	13.0
Shoulder dystocia	6	6.0
Postpartum hemorrhage	11	11.0
Postpartum UTI	19	19.0
Wound infection	8	8.0
Mastitis	2	2.0

Table-8: Complication of the fetus outcome during antenatal periods, delivery & postpartum periods

Parameter	Frequency	Percentage
Congenital anomalies	6	6.0
Prematurity	5	5.0
Neonatal hypoglycaemia	8	8.0
Hypocalcaemia	3	3.0
Respiratory distress	6	6.0
Congenital malformation	1	1.0
Hyperbilirubinemia	12	12.0
Birth asphyxia	4	4.0
Polycythemia	5	5.0
APGAR <7 score at 5 minutes	2	2.0
NICU admission	19	19.0
Still birth	1	1.0

DISCUSSION

In this study observed that majority (46.0%) patients belonged to age 26-30 years. The mean age was found 28.7±4.7 years. Jacob et al., [10] reported majority of the patients belonged to the age group of 25-34 years. Mustary et al., [11] reported that the mean age was found 26.04±4.62 years. Sathiamma et al., [12] observed that majority was between 25 and 29 years with a mean of 27.79 years. Kumari et al also observed the mean age was found 28.87±4.33 years [2].

In present study showed that more than half (54.0%) of the patients were primi para and 46(46.0%) were multi para. Sathiamma and Lalithambica observed 32.08% were primi gravidas and 67.92% were multi gravid [1]. Wahabi et al., reported that the mean parity was found 3.19±2.46 [13]. In study of Jacob et al., reported 58% patients were multi para in insulin group and 49.2% in metformin group [10].

In this study observed that majority (81.0%) patients were term and 19(19.0%) were pre-term of the gestational age when GDM. Mustary et al., [11] reported the mean gestational age was found 36.58±2.34 weeks. Sathiamma and Lalithambica showed that duration of pregnancy, 33 cases (24.6%) delivered preterm and 101 (75.4%) of patients had term

delivery [12]. Kumari et al., found 10.6% patients were preterm and 89.4 were term delivery [2].

In this study observed that more than three fourth (78.0%) patients were controlled on diet, 13(13.0%) treated insulin and 9(9.0%) treated oral hypoglycemic agents. Sathiamma and Lalithambica reported diet and insulin was given for 64.92% patients MNT alone in 32.8% patients and three required diet control, insulin and Metformin [12]. Kumari et al., total of 135 (79.41%) were controlled on diet, whereas 21 (12.35%) required insulin and 14 (8.23%) were treated with oral hypoglycemic agent (metformin) [2]. Balaji et al., [14] observed an incidence of 13.4% of GDM in pregnancy and need of insulin to be in 9.7% which was similar to need of insulin in 13.0% in our study.

In this study observed more than half (55.0%) of the patients were cesarean section and 45(45.0%) were normal vaginal delivery. Mustary et al., reported 54.0% patients were cesarean section and 46.0% were normal vaginal delivery [11]. Kumari et al., [2] reported 50.0% patients were cesarean section and normal vaginal delivery respectively. Sathiamma and Lalithambica also reported 58.96% patients were cesarean section. 62.68% patients had spontaneous labor and elective termination was done in 37.32% of case [12].

In this study observed that more than half (52.0%) babies were female, 5(5.0%) had low birth weight and 8(8.0%) babies were found in blood sugar <2.6 mmol/L. Kumari et al., [2] reported the mean birth weight was found 2848.8±539.4 g in GDM group. Sathiamma and Lalithambica reported that the mean birth weight in the study group was 2.9 kg. Two had weight >4 kg and 28 babies (20.8%) had weight <2.5 kg [12]. Slagjana Simeonova et al., observed that the mean birth weight was found 3220.4±784.9 gram [1].

In this study observed that 32(32.0%) patients had H/O GDM, 19(19.0%) had preterm delivery, 19(19.0%) had postpartum UTI, 18(18.0%) had pre-celapmsia, 16(16.0%) had UTI, 14(14.0%) had vulvovaginitis, 13(13.0%) had cervical tear, 12(12.0%) had polyhydramnios, 11(11.0%) had PROM and 11(11.0%) had postpartum hemorrhage. Mustary et al., [11] reported pregnancy complications, 4.0% had congenital anomaly, 30.0% had UTI, 20.0% had preterm delivery, 20.0% had pre-celamsia and 12.0% had vulvovaginitis. In intra-partum maternal complications, 13.0% had cervical tear, 13.0% had perineal tear and 8.7% had shoulder dystocia. In post-partum maternal complications, 42.6% had UTI, 15.4% had PPH, 11.1% had wound infection and 7.4% had mastitis. Sathiamma and Lalithambica observed common complications met in this study were PIH 16 cases, hydramnios in 13, UTI in 34 cases, premature rupture of membranes (PROM) was 7.4% and vulvitis about 17.9% of cases. Macrosomia was present in 2.9%

of cases and IUD 1.6% and NND 1.6% [12]. Jacob et al., [10] reported the 40(33%) patients who had infection in the antenatal period the commonest was vulvovaginitis in 19(15%) followed by urinary tract infection 13(11%), respiratory infection 8(7%). 12(10%) of the study population had gestational hypertension, 10(8%) had mild preeclampsia, 7(6%) had severe preeclampsia. Kumari et al., reported 8.8% patients had UTI, 13.5% had gestational hypertension/preeclampsia, 1.2% had polyhydramnios, 4.7% had vaginal candidiasis, 1.2% had PPH and 1.7% had postpartum sepsis [2].

In current study observed that 19(19.0%) babies were NICU admission followed by 12(12.0%) had hyperbilirubinemia, 8(8.0%) had neonatal hypoglycaemia, 6(6.0%) had respiratory distress infection, 6(6.0%) had congenital anomalies, 5(5.0%) had prematurity, 5(5.0%) had polycythemia and 4(4.0%) had birth asphyxia. Kumari et al., reported neonatal complications, 20.6% cases were found hypoglycemia, 2.9% hyperbilirubinemia, 4.7% respiratory distress syndrome and 4.7% congenital anomaly [2]. Mitanchez [15] observed that untreated moderate or severe GDM increased the risk of fetal and neonatal complications. Mustary et al., [11] observed 12.0% had hyperbilirubinemia, 8.0% had hypoglycaemia, 8.0% had respiratory distress infection, 8.0% had birth asphyxia, 2.0% had congenital anomalies and 4% were fresh still birth. Mimouni et al., found that infants of women with GDM have an incidence of neonatal hypoglycemia about 30-50% [16]. Holland reported incidence of congenital anomaly to be about 1-2% in GDM [17].

CONCLUSION

The occurrence of GDM is a high-risk situation. Maternal and perinatal morbidity and mortality is increased in women with GDM. Infections, preterm delivery, postpartum UTI, pre-eclampsia, UTI, vulvovaginitis, cervical tear, polyhydramnios, PROM and postpartum hemorrhage were the common maternal complications. Fetal complications include NICU admission, hyperbilirubinemia, neonatal hypoglycaemia, respiratory distress infection, congenital anomalies, prematurity, polycythemia and birth asphyxia most common cause. After delivery GDM generally improves but there is a risk of developing Type 2 DM, hypertension, cardiovascular disease and obesity. GTT done 6-8 wks postpartum to R/O DM.

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