

Feto-maternal outcome among women presented with diabetes at tertiary care Hospital

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ABSTRACT

Objective: To determine the feto-maternal outcome among women presented with pre-existing diabetes and gestational diabetes mellitus at tertiary care Hospital.

Material and methods: This was a cross-sectional study and conducted at gynae department of LUMHS. Duration was 6 months from June 2019 to December 2019. Women presented with gestational diabetes (GDM) and pre-existing diabetes (type I, type II) and those who underwent delivery were included. Data regarding feto-maternal outcome was recorded in self-made proforma and SPSS version 22 was used for analysis.

Results: Total 117 patients were studied, their mean age was 29.79±4.31 years and mean gestational age was 34.48±3.52 weeks. Most of the cases 93(79.5%) had gestational diabetes, followed by pre-existing diabetes mellitus type II was 21(17.9%) and type I was 03(2.6%). As per maternal complications pre-eclampsia was 56.4%, hypoglycemia was 79.5%, neuropathy 5.6%, neuropathy 05.1% and retinopathy was in 05.1% cases, while Polyhydramnios was observed in 30.8% of cases. As per neonatal complications preterm deliveries were 28.2%, neonatal hypoglycemia was 17.9%, congenital abnormalities were in only 3 cases, low birth weight was observed in 46.2% cases and 3 neonates were macrosomic. Low Apgar score <7 for 1 minute was in 35.7% cases and Apgar score > was observed in 64.1% neonates. Feto-maternal outcome was statistically insignificant as per GDM and pre-existing diabetes; p-values were quite insignificant.

Conclusions: It was concluded that hypoglycemia, GDM and pre-existing diabetes were found to be insignificantly associated with maternal and fetal outcome. Pre-eclampsia, hypoglycemia and Polyhydramnios were the commonest maternal complications and preterm deliveries, hypoglycemia, low birth weight and Apgar score <7 at 5 minutes were the commonest neonatal complications.

Key words: DM type I, DM type II, GDM, feto-maternal outcome

INTRODUCTION

Diabetes mellitus (DM) is characterized as the expanded blood glucose level because of abnormality in the secretion of insulin emission, insulin activity or the both. Delay in the diagnosis or improperly treated diabetes mellitus during pregnancy can prompt critical maternal and fetal adverse outcomes.¹ Development of the diabetes mellitus (DM) during pregnancy incontrovertibly turns gestation into a high-hazard pregnancy. Around 20% of influenced females evident diabetes mellitus type II within coming ten ears.^{2,3} During pregnancy diabetes mellitus is associated to polyhydramnios, macrosomic fetus, pre-term birth, increased rate of cesarean section, neonatal hypoglycemia, shoulder dystocia, neonatal respiratory distress syndrome and neonatal death.^{3,4} Several studies disclosed the poor maternal outcome with diabetes during pregnancy including a congenital abnormality rate twice that of the background population, a 3-fold raised risk of neonatal mortality and operative deliveries and the 5-fold elevated risk of the stillbirth.^{5,6} Arising challenge is the expanding incidence of diabetes mellitus type II during pregnancy associated with simultaneous ascent in obesity.⁵ Diabetes mellitus in pregnancy could either be pre-gestational (previously known) or the gestational. Gestational diabetes mellitus (GDM) is the well-known reason for diabetes in the pregnancy, representing up to 90% of pregnancies affected by diabetes.⁷ Reliable proof from top notch randomized controlled trials throughout the most recent some decades has discovered that appropriate management is effective in the ensuring outcomes of the pregnancy and long terms

results in GDM females.^{8,9} Glycemic control is regularly simpler to accomplish among females having diabetes mellitus type II than in those having diabetes type I however can require a lot higher dosages of insulin, occasionally requiring concentrated insulin formulations. As in diabetes type I, the requirements of the drop significantly after delivery.¹⁰ However this study has been conducted to determine the feto-maternal outcome among women presented with diabetes mellitus type I, type II and gestational diabetes mellitus at tertiary care Hospital.

MATERIAL AND METHODS

This was a cross-sectional study and conducted at gynae department of LUMHS. Duration was 6 months from June 2019 to December 2019. Women with diabetes mellitus type I, type II and gestation diabetes delivered at gynae department of LUMHS were included. Women having other severe comorbidities like chronic liver disease, twin pregnancy and those who were not agree to participate in the study were excluded. Complete medical history and clinical examination were done. All the women assessed regarding maternal outcome in terms of maternal complications and mortality. Fetal outcome was assessed in terms of fetal complication, birth weight and Apgar score. Neonatal birth weight was categorized as low birth weight (LBW) (<2500 g), Normal birth weight (2500–4000), and Macrosomia (≥4000 g). Patients were categorized as having normal (≥7) or low (<7) 1-min Apgar scores. Data regarding feto-maternal outcome was recorded in self-made proforma and SPSS version 22 was used for analysis.

RESULTS

Total 117 patients were studied. Patients' mean age was 29.79±4.31 years and mean gestational age was 34.48±3.52 weeks. Most of the patients 87(74.4%) were booked and 30(25.6%) were un-booked. Family history of diabetes was found among 45(38.5%) cases. Most of the cases 93(79.5%) had gestational diabetes, followed by pre-existing diabetes mellitus type II in 21(17.9%) cases and pre-existing diabetes mellitus type I was in 03(2.6%) of the study subjects. Majority of the patients 75(64.1%) were on oral medication of diabetes and 42(35.9%) cases were on insulin treatment. Out of all, 72(61.5%) women underwent cesarean section and 45(38.5%) were normally delivered. Table.1

Table.1. Demographic characteristics of the patients n=117

Variables	Mean±SD	Statistics
Age		29.79±4.31 years
Gestational age	Mean±SD	34.48±3.52 weeks
Booking status	Booked	87(74.4%)
	Un-booked	30(25.6%)
Family history of diabetes	yes	45(38.5%)
	no	72(61.5%)
Types of the diabetes	Gestational diabetes	101(86.3%)
	Diabetes type II	13(11.1%)
	Diabetes type I	03(2.6%)
Treatment	Insulin	42(35.9%)
	Oral medication	75(64.1%)
Mode of delivery	NVD	45(38.5%)
	C-section	72(61.5%)

Table. 2. Maternal and fetal outcome n=117

Maternal complications		Frequency	Percent
Pre- eclampsia	Yes	66	56.4
	No	51	43.6
Hypoglycemia	Yes	93	79.5
	No	24	20.5
Nephropathy	Yes	30	25.6
	No	87	74.4
Neuropathy	Yes	06	05.1
	No	111	94.9
Retinopathy	Yes	06	05.1
	No	111	94.9
Polyhydramnios	Yes	36	30.8
	No	81	69.2
Neonatal complications			
Birth	Pre-term	33	28.2
	Term	84	71.8
Congenital abnormalities	Yes	03	02.6
	No	114	97.4
Hypoglycemia	Yes	21	17.9
	No	96	82.1
Birth weight	Low birth weight	54	46.2
	Normal	60	51.3
	Macrosomia	03	02.6
Apgar score for 1 mint	<7	42	35.9
	≥7	75	64.1

As per maternal complications pre-eclampsia was seen in 56.4% of the women, hypoglycemia was among 79.5% cases, neuropathy was observed in 25.6%, neuropathy was among 05.1% cases and retinopathy was in 05.1% cases, while Polyhydramnios was observed in 30.8% cases. As per neonatal complications preterm deliveries were seen in 28.2% cases, neonatal hypoglycemia was 17.9%, congenital abnormalities were in only 3 cases, low birth weight was absorbed in 46.2% cases and 3 neonates were macrosomic. Low Apgar score <7 for 1 minute was in 35.7% cases and Apgar score > was observed in 64.1% neonates. Table.2

DISCUSSION

Complicated pregnancies due to diabetes of the mothers are linked with the adverse feto-maternal outcomes including raised risk of operative deliveries. In this study, mean age of the study subjects was 29.79±4.31 years and mean gestational age was 34.48±3.52 weeks. Similarly, Qadir SY et al¹¹ reported that the mean age of cases of gestational diabetes was 32.3 years. While, Wahabi AA et al¹² reported that the mean age of pre-existing pregnant women was 34.95±5.66 years. However, Memon FP et al¹³ reported that the majority of patients came with diabetes in pregnancy, were between 30 to 35 years of age (49.3%). In this study, most of the patients 87(74.4%) were booked and 30(25.6%) were un-booked. However, inconsistently Memon FP et al¹³ reported that 49 women were booked (32.6%) and they had proper antenatal checkup, while, 101(67.3%) were un-booked. In this study, family history of diabetes was found among 45(38.5%) cases. Consistently Abualhamael S et al¹⁴ reported that the family history of diabetes was found among 44(42.7%) out of 103 GDM cases. In this study, out of all, 72(61.5%) women underwent cesarean section and 45(38.5%) normally delivered. Similarly, Grabowska K et al¹⁵ reported that 47% of patients delivered vaginally, while caesarean section was performed in 53% cases. However, Qadir SY et al¹¹ reported that 34% females underwent normal vaginal deliveries, elective caesarean sections were done in 44% females and 14% women underwent emergency c-section, while 36% females delivered via ventouse. Gestational diabetes mellitus is not an indication of operative deliveries by itself, and the mode of delivery among women with this situation depends on an obstetric choice. Abdominal deliveries are for the most part suggested within the sight of specific elements, including cephalopelvic disparity, macrosomic fetus, cervix unfavorable for the induction, distress of the fetus and hazards of intrauterine death.^{16,17}

In this study, most of the cases 101(86.3%) had gestational diabetes, followed by pre-existing diabetes mellitus type II was among 13(11.1%) cases and pre-existing diabetes mellitus type I was in 03(2.6%) of the study subjects. However, in the study of Memon FP et al¹³ 46(30.6%) women were known diabetics, while 104 (69.3%) were having GDM. In this study, majority of the patients 75(64.1%) were on oral medication for diabetes and 42(35.9%) cases were on insulin treatment. On the other hand, Qadir SY et al¹¹ also reported that 64% patients were under insulin treatment.

In this study, pre-eclampsia was seen in 56.4% of the women, hypoglycemia was among 79.5% cases,

neuropathy was observed in 25.6%, neuropathy was among 05.1% cases and retinopathy was in 05.1% cases, while Polyhydramnios was observed in 30.8% cases. Inconsistently, Qadir SY et al¹¹ reported that Polyhydramnios was in 18% of cases, premature labour occurred in 16% cases and pregnancy induced hypertension was 12%. On the other hand, Bano K et al¹² reported that among gestational diabetes mothers gestational hypertension was 62(46.3%), pre-eclampsia was 49 (36.6%, preterm labour was 38 (28.4%) and Polyhydramnios was seen in 33 (24.6%) of the women. In gestational diabetes mellitus, hyperglycemia may harm the endothelial cells, which can consequence dysfunction of vascularity related to hypertension. However, because of this, it is has been recommended that gestational diabetes mellitus builds the frequency of hypertension during pregnancy and the post pregnancy period.¹⁹

In this study, as per neonatal complications preterm deliveries were seen in 28.2% cases, neonatal hypoglycemia was 17.9%, congenital abnormalities were in only 3 cases, low birth weight was absorbed in 46.2% cases and 3 neonates were macrosomic and low Apgar score <7 at 5 minute was in 35.7% cases and Apgar score >7 was observed in 64.1% neonates. Similarly, Bano K et al¹² reported that the Apgar score <7 at 5 minute was in 28 (20.9%) and >7 was in 58 (43.3%) neonates, while neonatal hypoglycemia was among 21 (15.7%). On the other hand, Memon FP et al¹³ reported that 5(3.3%) were intrauterine deaths, 4(2.6%) were still born, 9 (6.0%) were Early neonatal deaths (ENND), 7(4.6%) had multiple congenital anomalies, abortions were 3(2%) and macrosomia was the significant morbidity seen in 51(34%) babies, after delivery 88(58.6%) were found hypoglycemic on checking blood sugar after delivery. 30(20.0%) developed mild to moderate hyperbilirubinemia, hypocalcaemia was seen in 20(13.3%) and birth Asphyxia was seen in 36(24%) of cases. In this study, the frequency of macrosomia was very low as compared to other studies,^{11,13} and this may be because of high frequency of hypertensive mothers in this series.

CONCLUSION

It was concluded that hypoglycemia, GDM and pre-existing diabetes were found to be insignificantly associated with maternal and fetal outcome. Pre-eclampsia, hypoglycemia and Polyhydramnios were the commonest maternal complications and preterm deliveries, hypoglycemia, low birth weight and Apgar score <7 at 5 minutes were the commonest neonatal complications. Early diagnosis, proper management at appropriate time and best management decision of delivery can reduce the fetomaternal adverse outcome associated to maternal diabetes.

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