

Original Research Article


Retrospective Study on Prevalence, Risk Factors, Maternal and Fetal Outcome in Gestational Diabetes Mellitus

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Abstract

Background: Women with gestational diabetes mellitus pose an important health problem because diabetes not only affects maternal and fetal outcome but these women and fetuses are also at an increased risk of developing diabetes and related complications later in their life.

Objectives: The study was aimed to find out prevalence, risk factors, maternal and fetal outcome in patients of gestational diabetes mellitus.

Materials and methods: Retrospective study was conducted over a period of 6 months in the Department of Obstetrics and Gynecology, King George Hospital, Visakhapatnam, a Tertiary care centre. Detailed information regarding maternal, fetal and labour outcome parameters was recorded.

Results: Prevalence of GDM was found to be 3.12%. Of the affected women, 34.5% were in the age group between 26-30 years, 10.9% were having GDM in previous pregnancy, 14.5% were having family history of diabetes, 20% were managed with diet alone, 41% were on insulin treatment, 65.4% underwent C-Section, 43% of babies were of birth weight 3.1-3.5 kg, 25% of cases were associated with other risk factors like pre-eclampsia.

Conclusion: Diabetes during pregnancy is associated with higher maternal and fetal morbidity. Therefore, early screening, detection, close monitoring and intervention is essential to reduce maternal and fetal short and long term adverse effects in high risk groups. Pregnancy provides an opportunity to the clinician to control the disease process and inculcate healthy lifestyle practices in these patients.

Key words

Gestational Diabetes Mellitus, Prevalence, Maternal and fetal outcome.

Introduction

GDM is the glucose intolerance of variable degree with onset or first recognition during pregnancy. Gestational diabetes mellitus usually presents later in the second or during the third trimester. Diabetes has become a global pandemic because of aging population, sedentary life style, urbanization and increasing incidence of obesity. Prevalence of diabetes is on the rise in developing countries. High prevalence of GDM of the order of 18% has been reported from India [1]. The WHO estimates the prevalence of diabetes mellitus including gestational diabetes mellitus in India to be around 40.9 million in 2006. It is expected to rise to 69.9 million by 2025. Indians belong to high risk ethnic group for developing Diabetes Mellitus [2]. Abnormal metabolic environment due to hyperglycemia has a profound impact on maternal and fetal outcome. The factors that influence the risk of GDM among mothers are previous history of GDM, family history of diabetes, obesity, recurrent urinary tract infections, infertility treatment, unexplained neonatal death, macrosomic babies, prematurity, pre-eclampsia and advanced maternal age.

In GDM patients, the fetus is exposed to high level of glucose which results in excess fetal growth, increased insulin secretion and decreased insulin sensitivity. The short term complications of high infant birth weight are shoulder dystocia and hypoglycemia. Women with GDM are at high risk for impaired glucose intolerance and type 2 diabetes in the years following pregnancy. The neonates of mothers with GDM are at the risk of childhood obesity as well as type 2 diabetes mellitus [3]. Fetal complications are shoulder dystocia, birth injuries, neonatal hyperbilirubinemia, hypoglycemia and respiratory distress syndrome [4].

Thus early detection, close monitoring and proper management of GDM women results in improved maternal and neonatal outcome. Glucose tolerance returns to normal in the majority of women with gestational diabetes but

some women will have glucose intolerance in subsequent pregnancies.

Materials and methods

This was a retrospective study aimed at finding out prevalence, risk factors, maternal and fetal outcome in patients of gestational diabetes mellitus at KGH, Visakhapatnam over a period of 6 months from December 2018 to May 2019. A total of 110 pregnant women with impaired glucose tolerance were selected for the study. Details of medical history, obstetric history and family history of diabetes were collected.

Results

Prevalence of GDM in this study was found to be 3.12%. Out of 110 cases, maximum cases were in the age group between 21-25 years (**Table – 1**). Period of Gestation at which GDM diagnosed was as per **Table – 2**. 58 cases out of 110 cases were diagnosed early, 46 cases were on insulin therapy, 42 cases were on metformin (**Table – 3**).

Table – 1: Distribution of cases according to age.

Age in years	No. of cases (n=110)	%
<20 yrs	12	10.9%
21-25 yrs	46	41.8%
26-30 yrs	38	34.5%
>30 yrs	14	12.7%

Table – 2: Period of Gestation at which GDM diagnosed.

	No. of cases (N=110)	%
Early diagnosed <28 weeks	58	52.7%
Late diagnosed >28 weeks	52	47.2%

Table – 3: Treatment.

	No. of cases (N=110)	%
On MNT alone	22	20%
T. Metformin	42	38.1%
On insulin	46	41.8%

Table – 4: Parity.

Parity	No. of cases (N= 110)	%
0-2	40	36.3%
3-4	22	20%
Multipara	48	43.6%

Table – 5: Mode of delivery.

	No. of cases (N= 110)	%
Vaginal	38	34.5%
LSCS	72	65.4%

Table – 6: Onset of labour.

	Normal delivery	LSCS
Spontaneous onset of labour	18	6
Induced	20	10

Table – 7: Indications for C-section.

	No. of cases (N= 110)	%
CPD	6	5.45%
Failed induction	6	5.45%
Previous C-section	50	45.4%
Fetal distress	6	5.45%
Secondary arrest of descent	4	3.63%

Table – 8: Associated risk factors.

Risk factor	No. of cases (N= 110)	%
Pre-eclampsia	28	25.4%
Hypothyroidism	18	16.3%
Polyhydramnios	30	27.2%

Table – 9: Birth weight.

Birth weight (kg)	No. of cases (N= 110)	%
2-2.5	16	14.5%
2.6-3	30	25.4%
3.1-3.5	48	43.6%
>3.5	16	14.5%

Out of 110 cases, 48 cases of multipara were having GDM (Table – 4). Mode of delivery was as per Table – 5. Out of 110 cases, 72 cases underwent LSCS, of which 10 cases were induced (Table – 5). Onset of labour was as per Table – 6.

Table - 10: Fetal outcome.

	No. of babies (n=108)	%
Hypoglycemia	12	11.1%
Hyperbilirubinemia	4	3.7%
Macrosomia	2	1.85%
RDS	4	3.7%

Table – 11: Apgar score.

Apgar	No. of cases (n= 110)	%
8-10	100	90.9%
4-6	6	10.9%
2-4	2	1.8%

Indications for C-section were as per Table – 7. Associated risk factors were as per Table – 8. Out of 110, 48 babies were in between 3.1-3.5 kg birth weight as per Table – 9. Fetal outcome was as per Table – 10. Out of 108 babies, 100 were with apgar 8-10, 6 were with apgar 4-6, 2 were with apgar 2-4 (Table – 11).

Of the affected

- 10.9% had GDM in previous pregnancy.
- 14.5% had family history of diabetes.
- 25% of cases were associated with other risk factors like pre-eclampsia.
- 27.2% had history of spontaneous abortions.
- IUD in 2 cases (3.63%), both were term IUDs of birth weight 2.4 kg and 2.6 kg.
- SNCU admissions in 10 cases (18.1%).

Discussion

The prevalence of GDM in this study was 3.12% which varies depending on the population studied. In a study by Seshiah, et al. the overall prevalence was 16.55% [5].

In a study by Zarger, et al. prevalence was 3.8% [6]. In south India, the prevalence has increased from 1% in 1998 to 16.55% in 2004. Pregnancy is a diabetogenic state manifested by insulin resistance and hyperglycemia. GDM also identifies women who are at high risk of developing diabetes later in their lives [7].

The age group at risk of developing GDM in this study was between 20-30 years. This was similar to study done by Seshiah, et al. [5].

In this study, out of 110 cases, 72 cases underwent LSCS (65.4%). In Toronto Tri-hospital, it was reported that women with untreated GDM had two-fold increased risk of caesarean delivery [8].

Hong, et al. have also reported increase prevalence of pregnancy induced hypertension in GDM women [9].

Increase in BMI is also a risk factor for GDM Bhat M, et al. [10], Keshavarz M, et al., 2005 [11]. In our study, 25.4% of women were associated with PIH, 27.2% of women were complicated with polyhydramnios. PIH, polyhydramnios and hypothyroid also has correlation with GDM Boriboonthirunsaran, et al. 2006 [12].

In our study, higher number presented with GDM was multigravida. In accordance to our findings Seshiah, et al. [5], Zargar, et al. [6], Kalyani KR, et al. [13] have reported similar findings. Lesser parity was noted by Kevin J, et al., 2006 [14] and primigravida by Tayol R, et al., 2002 [15] have more risk of gestational diabetes mellitus.

The risk of macrosomia, hypoglycemia, hyperbilirubinemia were found in babies born to GDM mothers. This study was in correspondence to the previous study of Schneider S, et al. [16] who reported macrosomia, stillbirths and other complications.

Conclusion

Pregnancy is a diabetogenic state manifested by insulin resistance and hyperglycemia. Regular antenatal visits and monitoring of serum glucose levels help in decreasing the maternal complications as well as neonatal mortality and morbidity. Advanced maternal age, obesity and family history of diabetes has been reported to

have significant association with prevalence of GDM. Early screening of pregnant females leads to early diagnosis and management of GDM and this is the need of the hour.

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