MATERNAL AND FOETAL OUTCOME IN GESTATIONAL DIABETES MELLITUS

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ABSTRACT

BACKGROUND

Gestational Diabetes Mellitus is important in that it poses a risk to the pregnant woman and her baby. The prevalence of Gestational Diabetes Mellitus ranges from 0.2%-12% depending on the population studied.
Aim of this study is to assess the hospital prevalence of Gestational Diabetes Mellitus, maternal and foetal outcomes in pregnancies complicated by Gestational Diabetes Mellitus at a tertiary care unit during the study period.

MATERIALS AND METHODS

The study was conducted at a tertiary care centre at Visakhapatnam over a period of 1 year from June 2015 to May 2016. A total of 8,906 were screened and 84 cases were diagnosed as Gestational Diabetes Mellitus according to American Diabetic Association (ADA) Guidelines. They were followed till delivery and maternal and foetal outcome noted.

RESULTS

The prevalence of Gestational Diabetes Mellitus in our study was 0.94%. The most common age group was between 25 to 30 years with 42 cases [50%]. The number of cases above BMI 30 kg/m2 were 58 [69.04%]. The most common complication associated with GDM was abortions [23.8%] followed by preeclampsia [21.42%] and infections mostly vulvovaginal candidiasis [20.23%]. Neonatal Intensive Care Unit admission rate was high, 29 cases [34.52%].

CONCLUSION

Gestational Diabetes Mellitus is an important maternal complication in pregnancy especially in India where the incidence is rising rapidly. Early detection, appropriate multidisciplinary care at tertiary care center can reduce complications associated with Gestational Diabetes Mellitus.

KEYWORDS

Gestational Diabetes, Maternal, Foetal, Outcome.

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INTRODUCTION: India today is the diabetic capital of the world. A venous blood sugar level more than 140 mg/dL is suggestive of Gestational Diabetes Mellitus (GDM) and more than 90% of these women are managed by meal plan alone. GDM tends to occur in older women with higher body mass index, higher parity and other associated risk factors. Diabetes mellitus complicates 1-20% of all pregnancies worldwide, which include pregestational diabetes mellitus and gestational diabetes mellitus.[1] GDM is important in that it poses a risk to the pregnant woman and her baby. GDM is associated with higher incidence of maternal mellitus later in life.[2] The major morbidities associated with infants of diabetic mothers include respiratory distress, growth restriction, polycythaemia, hypoglycaemia, hypocalcaemia and hypomagnesaemia.[3]

MATERIALS AND METHODS: The study was conducted at a tertiary care centre at Visakhapatnam over a period of 1 year from June 2015 to May 2016. A total of 84 subjects of GDM were recruited who delivered in the hospital during the study period. The total number of deliveries during that period was 8,906.

Methodology: Screening was done according to American Diabetic Association (ADA) Guidelines:

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At First Prenatal Visit - Measure Fasting Plasma Glucose (FPG) or random (casual) on all antenatal women routinely. If FPG is <5.1 mmol/L (92 mg/dL), test at 24 to 28 weeks with 50-g OGCT. If within normal limits, test again at 32-34 weeks.

Inclusion Criteria: All antenatal women attending the hospital for antenatal care except women with known diabetes prior to conception, other medical disorders affecting perinatal outcome like renal disease, chronic hypertension, heart disease and who were on drugs affecting carbohydrate metabolism.

RESULTS: The prevalence of GDM in our study is 0.94%.The most common age group was between 25 to 30 years with 42 cases [50%]. The number of cases below 25 years were 16 [19.04%] and above 30 years were 26 [30.95%]. The prevalence of GDM was higher in multigravida with 53 cases [63.09%] and the prevalence in primigravida was 31 cases [36.90%] [Table 1]. There were no cases of GDM below BMI 20 kg/m2. The number of cases above BMI 30 kg/m2 and between 20-30 kg/m2 were 58 [69.04%] and 26 [30.95%], respectively [Table 2].

The most common complication associated with GDM was abortions 20 cases [23.8%] followed by preeclampsia 18 cases [21.42%] and infections mostly vulvovaginal candidiasis in 17 cases [20.23%]. PROM was seen in 11 cases [13.09%], polyhydramnios in 9 cases [10.71%] and hypothyroidism in 8 cases [9.5%]. Recurrent pregnancy losses [BOH] was seen in 7 cases [8.3%], UTI in 6 cases [7.1%] and PCOD in 5 cases [5.9%] [Table 3]. Vaginal delivery was conducted in 53 cases [63.09%] being the most common mode of delivery. Instrumental delivery in 8 cases [9.5%] and LSCS in 23 cases [27.37%]. The LSCS rate was similar to the rate at our hospital ranging from 25-30% [Table 4]. Stillbirths were seen in 3 cases [3.5%] and early neonatal deaths in 4 cases [4.7%]. NICU admission rate was high, 29 cases [34.52%] of which low APGAR was seen in 9 cases [10.71%], RDS in 3 cases [3.5%], hypoglycaemia in 12 cases [14.28%] and hyperbilirubinaemia in 5 cases [5.9%] [Table 5].

Age	Number of cases [N=84]	Percentage
<25 yrs.	16	19.04%
25-30 yrs.	42	50%
>30 yrs.	26	30.95%
Parity		
Primi	31	36.90%
Multigravida	53	63.09%

Table 1: Demographic Factors

BMI	No. of Cases [N=84]	Percentage
<20	0	0%
20-30	26	30.95%
>30	58	69.04%

Table 2: Effect of BMI on GDM

Complications	Number of cases [N=84]	Percentage
Preeclampsia	18	21.42%
Polyhydramnios	9	10.71%
PROM	11	13.09%
PCOD	5	5.9%
BOH	7	8.3%
Abortions	20	23.8%
UTI	6	7.1%
Hypothyroidism	8	9.5%
Infections	17	20.23%

Table 3: Pregnancy Complications Associated with GDM [Most Patients had More Than One Complication During Pregnancy]

Mode of delivery	Number of cases [N=84]	Percentage
Vaginal delivery	53	63.09%
Instrumental delivery	8	9.5%
Emergency LSCS	15	17.85%
Elective LSCS	8	9.52%

Table 4: Mode of Delivery

Outcome	Number of cases [N=84]	Percentage
APGAR score 10 at 1 minute	48	57.14%
Stillbirths	3	3.5%
Early Neonatal deaths	4	4.7%
NICU admissions		
APGAR <8	9	10.71%
RDS	3	3.5%
Hypoglycaemia	12	14.28%
Hyperbilirubinaemia	5	5.9%

Table 5: Neonatal Outcome

DISCUSSION: The prevalence of GDM ranges from 0.2% - 12% depending on the population studied. In the present study, the prevalence of Gestational Diabetes Mellitus (GDM) is 0.94%. Dahiya K et al[4] showed prevalence of GDM as 7%. Seshiah et al[5] screened 3674 pregnant women with 2 hrs. 75 gm test in various parts of the country and the overall prevalence was 16.55%. In a study by Zargar et al[6] determined the prevalence of GDM in Kashmiri women was 3.8%. In the study by Priyanka Kalra et al,[7] the prevalence of GDM was 6.6%. Farooq MU et al,[8] the prevalence of GDM was 3.5%. Ritu Joy et al,[9] the prevalence of GDM was 1.5% In a study by Emmanuel Odar et al,[10] the age range for mothers with gestational diabetes was 18-39 years with the mean age of 28.6 years. The majority (96.8%) of mothers were 20-39 years. Krishna Dahiya et al[4] in their study, the mean age of GDM patients was 27±3.14 years. Seshiah et al[11] in their community-based study found the highest prevalence in the age group of 30-34 years. Zargar et al[6] also found that GDM prevalence increased steadily with increasing age (from 1.7% in women below 25 years to 18%

in women 35 years or older). Ritu Joy et al,[9] the average age of GDM women was 28.72±4.57 years. Regarding gravidity, 17 (45.94%) women were primigravida and 20 women (54.056%) were multigravida. Farooq MU et al[8] study, 44 (88%) patients were above 25 years of age and 38 (76%) were multiparous. In the present study, the most common age group was between 25 to 30 years with 42 cases [50%]. The number of cases below 25 years was [19.04%] and above 30 years was [30.95%]. In the present study, the prevalence of GDM was higher in multigravida with [63.09%] and the prevalence in primigravida was [36.90%].

Emmanuel Odar et al,[10] the body mass index was more than 26 in women with gestational diabetes. In the present study, there were no cases of GDM below BMI 20 kg/m2. The number of cases above BMI 30 kg/m2 and between 20-30 kg/m2 were [69.04%] and [30.95%], respectively. Krishna Dahiya et al,[4] the mean BMI of the cases was 26.07±3.45 kg/m2 with range 20.4-32.0 kg/m2. Various authors have confirmed that not only obesity, but also overweight women have greatly increased risk of developing gestational diabetes.[12,13] Ritu Joy et al[9] regarding BMI, the average value was 27.52±3.30 kg/m2. Robin Varghese et al,[14] average age was 27.62 years, BMI was 27.89 kg/m2 and weight was 68.32 kg.

Emmanuel Odar et al[10] in their study of mothers with Gestational Diabetes Mellitus (GDM) found that they were four times more likely to have hypertensive disease (p=0.04) and nine times more likely to have vaginal candidiasis (p=0.002). Krishna Dahiya et al[4] in their study found GDM women to have higher proportion of obstetric complications including polyhydramnios (11.2 times), recurrent vaginal infections (4.85 times), intrauterine growth retardation (3.86 times), intrauterine death (1.4 times), preterm labour (1.62 times), preeclampsia (1.91 times) and GCMF (1.86 times) when compared to controls. Findings similar to Krishna Dahiya et al[4] were found in study by Ganguly et al,[12] Turki G. et al.[13] In the study by Priyanka Kalra et al,[7] hypertension, vaginal candidiasis and abruptio placentae were the common maternal complications. In the study by Farooq MU et al,[8] the most frequent maternal complication was polyhydramnios 9 (18%). Robin Varghese et al,[14] 32 women (14.4%) were found with hypertension, 8 women (3.6%) with oligohydramnios, 6 (2.7%) women with polyhydramnios and 5 (2.25%) women with hypothyroidism. In the present study, the most common complication associated with GDM was abortions [23.8%] followed by preeclampsia [21.42%] and infections mostly vulvovaginal candidiasis [20.23%]. PROM was seen in [13.09%], polyhydramnios in [10.71%] and hypothyroidism in [9.5%]. Recurrent pregnancy losses [BOH] was seen in [78.3%], UTI in [7.1%] and PCOD in [5.9%].

Mothers with gestational diabetes were two times more likely to have caesarean section because of big babies and obstructed labour than the controls in the study by Emmanuel Odar et al.[10] In their study, 14 (40%) GDM females underwent caesarean section compared to 58 (15%) in the control group. Many studies have found high caesarean delivery rates in GDM patients despite good maternal blood glucose control during pregnancy.[15,16] Farooq MU et al,[8] caesarean section was done in 29 (58%) patients. Ritu Joy et al,[9] 83.78% of women underwent caesarean delivery, only 16.22% had normal delivery. Robin Varghese et al,[14] 92.80% of women underwent caesarean delivery, only 7.20% had normal delivery. In the present study, vaginal delivery was conducted in [63.09%] of cases being the most common mode of delivery. Instrumental delivery in [9.5%] and LSCS in [27.37%]. The LSCS rate was similar to the rate at our hospital ranging from 25-30%.

Emmanuel Odar et al[10] documented that babies born to mothers with gestational diabetes were more likely to be macrosomic, stillborn and have shoulder dystocia than those of normal women (p <0.0001). Complications of hypoglycaemia, trauma to the baby, congenital abnormality of the baby and cot death were infrequent in their study. Krishna Dahiya et al[4] in their study, the foetal outcome was significantly poor in the GDM positive mothers. The incidence of macrosomia understandably was higher in GDM group. Hypoglycaemia was seen in 5.7%, hyperbilirubinaemia in 11.4%, respiratory distress syndrome in 5.7% babies. The rate of large for gestational age babies in study by Akhlaghi and Hamedi[17] was 14.3% and 16% in Ray et al study.[18] In an Iranian study, the incidence of respiratory distress syndrome, hypoglycaemia and large for gestational age baby were 3.7%, 18.5% and 14.8% respectively in the GDM population. Farooq MU et al,[8] the commonest foetal complication was macrosomia 18 (36%). Ritu Joy et al,[9] large for gestational age, 23 (62.16%), 15 (40.54%) of babies had hypoglycaemia, 13 (35.13%) babies had hyperbilirubinaemia. Robin Varghese et al,[14] there was no history of macrosomia, intrauterine growth retardation and stillbirth. All babies were born normal in health except for hyperbilirubinaemia and hypoglycaemia.

In present study, stillbirths was seen in [3.5%] and early neonatal deaths in [4.7%]. NICU admission rate was high, 29 cases [34.52%] of which low APGAR was seen in 9 cases [10.71%], RDS in 3 cases [3.5%], hypoglycaemia in 12 cases [14.28%] and hyperbilirubinaemia in 5 cases [5.9%].

CONCLUSION: Gestational Diabetes Mellitus is an important maternal complication in pregnancy especially in India where the incidence is rising rapidly. Early detection, appropriate multidisciplinary care at tertiary care center can reduce complications associated with Gestational Diabetes Mellitus.

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