**MATERNAL AND FETAL OUTCOME IN PATIENTS WITH GESTATIONAL DIABETES MELLITUS**

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**ABSTRACT**

**Introduction:** Women with GDM are expected to have increased risk for the development of gestational hypertension or pre-eclampsia(2). GDM is associated with an increased risk of maternal and fetal complications.

**Aims and objectives:** To study the maternal and fetal outcome in patients with gestational diabetes mellitus (GDM**).**

**Material and methods:** A retrospective cohort study was conducted in SMGS Hospital, GMC Jammu over a period of nine months from January 2020 to September 2020. A total of 278 patients were recruited in the study and divided into two groups Group A consists of 139 patients with GDM and group B comprises 139 patients without GDM. Maternal and neonatal complications were noted.

**Results:** the women with GDM had higher BMI. 18% of the women had BOH. 315 had associated hypertension. 56% women with GDM had vaginal delivery as compared to 77% in women without GDM. Shoulder dystocia was reported in 2% women in GDM group, while no case was reported in another group. 18% of the neonate born to mother with GDM required NICU admission and 4 fetal death were reported, while no fetal death was reported in another group.

**Conclusion:** . Early screening for gestational diabetes especially in high risk patients should be done for a better maternal and neonatal outcome. Pregnant women with GDM should deliver at health facilities to properly manage any complication if occurs during delivery.

**Key words:** Preeclampsia, Prematurity, Hypoglycemia, Respiratory distress, Outcome

**INTRODUCTION**

Gestational Diabetes Mellitus(GDM) is characterized by carbohydrate intolerance of varying severity with onset or first recognition during pregnancy(1). It’s increasing prevalence results in significant short and long term impairments in the individual’s health and their offspring’s health. Women with GDM are expected to have increased risk for the development of gestational hypertension or pre-eclampsia(2). GDM is associated with an increased risk of maternal and fetal complications.

The rate of caesarean section is increased in the mother and the risk of macrosomia is increased in the new born(3). The blood glucose control during pregnancy significantly reduces neonatal complications like macrosomia and shoulder dystocia.

**AIMS AND OBJECTIVES**

To study the maternal and fetal outcome in patients with gestational diabetes mellitus (GDM**).**

**MATERIAL AND METHODS**

A retrospective cohort study was conducted in SMGS Hospital, GMC Jammu over a period of nine months from January 2020 to September 2020.

 *Inclusion criteria:*

* Patients with GDM who were managed and delivered in our hospital.

*Exclusion criteria:*

* Patients with pregestational diabetes ( type 1, type 2 DM).

 Pregnant women who had normal OGTT were taken as controls. They were matched for age and parity.

A total of 278 patients were recruited in the study and divided into two groups Group A consists of 139 patients with GDM and group B comprises 139 patients without GDM.

All pregnant women were screened in the first antenatal visit using Fasting Blood Glucose(FBG) values. If the FBG at the first visit was normal, 75g OGTT was performed at 24 weeks.

In high risk patients, 75g OGTT was performed at 16 weeks and if normal was repeated at 24 weeks of gestation.

High risk patients are defined as

* women with a history of unexplained still birth, IUFD or unexplained neonatal death
* birth of a baby with malformations associated with diabetes
* women with history of birth of a macrosomic baby weighing more than 4 Kgs
* women with BMI more than 25 Kgs/m2
* women with a history of PCOD.

The WHO criteria was used to diagnose GDM at any time in pregnancy.

* FBG 5.1-6.9 mmol/L(92-125 mg/dL)
* 1hr plasma glucose > 10.0 mmol/L(180mg/dL) following a 75g oral glucose load
* 2hr plasma glucose 8.5-11.0 mmol/L(153-199mg/dL) following a 75g oral glucose load

A note of medical co-morbidities was also made if present. Height, weight, blood pressure, HbA1c, 24hrs urinary proteins were also done in all the patients. Maternal complications which were noted during pregnancy included pre-eclampsia and complications during labor included unsatisfactory progress of labor, Pre-mature rupture of membranes, Perineal tear and Shoulder dystocia . Neonatal complications which were noted included Prematurity, Respiratory distress, Hypoglycemia(Plasma glucose levels< 45mg/dL), Fetal demise and Congenital anomalies.

**RESULTS**

**Table 1. Clinical characteristics of the women with GDM and controls**

|  |  |  |
| --- | --- | --- |
| characteristics | GDM( n=139) | Controls (n=139) |
| Average age in years(SD) | 28(4.4) | 27(3.8) |
| Median gravidity | 2 | 2 |
| Previous GDM, n(%) | 20(14) | 0 |
| First degree relatives with diabetes, n(%)  | 60(43) | 30(21.5) |
| Bad obstetric history | 25(18) | 12(8.6) |
| Hypertension, n(%)* Gestational
* Chronic
 | 32(25)9(6) | 10(7.1)0 |
| Hypothyroidism  | 42(30) | 16(11.5) |
| BMi(kg/m2) | 28.8 | 25 |

**Table 2. Maternal and neonatal complications among cases and controls**

|  |  |  |
| --- | --- | --- |
| Complications  | GDM, n(%) | Controls, n(%) |
| Maternal complications  | 47(34) |  |
| Complications during pregnancy* Preeclampsia
 | 12(9) |  |
| Complications during labour* Unsatisfactory progress of labour
* PROM
* Perineal tear
* Shoulder dystocia
 | 31(22)20(14)6(4)23 |  |
| Neonatal complications* Prematurity
* Respiratory distress
* Hypoglycaemia
* Fetal demise
* Congenital anamolies
 | 26(18)6(4)15(11)6(4)42 |  |

**Table 3. Mode of delivery**

|  |  |  |
| --- | --- | --- |
| Mode of delivery | GDM,n(%) | Controls, n(%) |
| Caessarean section* Emergency
* Elective
 | 61(44)25(18)36(26) | 31(22)20(14)11(8) |
| Vaginal delivery | 78(56) | 108(71) |

**DISCUSSION**

Universal screening as is advised, if practiced will allow early diagnosis. The women with GDM had higher BMI as expected. The incidence of gestational diabetes increased with increasing maternal BMI. Eighteen percent of the women had a BOH. It has been reported that mothers with a BOH have a slightly higher incidence of gestational diabetes.Thirty-one percent women had associated HTN. Nine percent had chronic HTN. The presence of chronic HTN increases the risk of developing GDM. However, the outcome is unaffected in women with chronic HTN and GDM like the results of study done by Leon MG, Moussa HN, Longo M et. Al5.

Sixty-five percent of the women received insulin for blood sugar control. Maternal hypoglycemia had been noted in 7 (5%) women. This could not be compared with the previous studies as they had not reported on maternal hypoglycemia

Preeclampsia occurred in 9% of the women. In the trial done by Crowther *et al*.6, pre-eclampsia occurred in 12% of the women in the intervention arm. However, Bhat *et al*7. have reported a much higher (29%) rate of preeclampsia in GDM from Thiruvananthapuram.

 The rate of cesarean section is in general increased in GDM. The rate of cesarean section noted in this study was 44%. In studies by Bhat *et al*7. and Sreelakshmi *et al*8., it has been reported to be 40% and 33%, respectively.

In our study, shoulder dystocia was seen in 3(2%) cases. It has been previously reported to be 1.4% in treated women with GDM by Wahi *et al*9*.* Respiratory distress was the most common complication (11%) noted here. A similar proportion has been reported in the study by Sreelakshmi *et al*7and Crowther *et al*6. Neonatal hypoglycemia occurred in six newborns (4%) in this study. This outcome can be improved by adherence to current blood sugar control recommendations.

**CONCLUSION**

Gestational diabetes is associated with HTN, hypothyroidism and obesity. Early screening for gestational diabetes especially in high risk patients should be done for a better maternal and neonatal outcome.

Pregnant women with GDM should deliver at health facilities to properly manage any complication if occurs during delivery.

**REFERENCES**

1. Joanna Girling, Anne Dorn horst. Pregnancy and diabetes mellitus. In: John C Pick Up, Gareth Williams (eds) Textbook of Diabetes. 3rd ed. Blackwell publishing company; 2003: 65-6.
2. Bryson CL, Ioannou GN, Rulyak SJ, Critchlow C. Association between gestational diabetes and pregnancy-induced hypertension. Am J Epidemiol 2003;158:1148-53.
3. Kampmann U, Madsen LR, Skajaa GO, Iversen DS, Moeller N, Ovesen P. Gestational diabetes: A clinical update. World J Diabetes 2015;6:1065-72.
4. WHO Diagnostic Criteria and classification of hyperglycemia first detected in pregnancy Geneva: WHO; 2013.
5. Leon MG, Moussa HN, Longo M, Pedroza C, Haidar ZA, Mendez-Figueroa H, *et al.* Rate of gestational diabetes mellitus and pregnancy outcomes in patients with chronic hypertension. Am J Perinatol 2016;33:745-50
6. Crowther CA, Hiller JE, Moss JR, McPhee AJ, Jeffries WS, Robinson JS; Australian Carbohydrate Intolerance Study in Pregnant Women (ACHOIS) Trial Group. Effect of treatment of gestational diabetes mellitus on pregnancy outcomes. *N* Engl J Med 2005;352:2477-86.
7. Bhat M, Ramesha KN, Sarma SP, Sangeetha Menon SC, Kumar G. Determinants of gestational diabetes mellitus: A case control study in a district tertiary care hospital in South India. Int J Diabetes Dev Ctries 2010;30:91-6.
8. Sreelakshmi PR, Nair S, Soman B, Alex R, Vijayakumar K, Kutty VR. Maternal and neonatal outcomes of gestational diabetes: A retrospective cohort study from Southern India. J Family Med Prim Care 2015;4:395-8.
9. Wahi P, Dogra V, Jandial K, Bhagat R, Gupta R, Gupta S, *et al.* Prevalence of gestational diabetes mellitus (GDM) and its outcomes in Jammu region. J Assoc Physicians India 2011;59:227-30.