THE CLINICAL STUDY OF GESTATIONAL DIABETES MELLITUS

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HOW TO CITE THIS ARTICLE:

Maxima Khurana, Meenakshi Shetty, Manan Anand. "The Clinical Study of Gestational Diabetes Mellitus". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 29, April 09; Page: 4979-4985, DOI: 10.14260/jemds/2015/725

ABSTRACT: BACKGROUND: Gestational diabetes mellitus (GDM) is defined as glucose intolerance of variable degree with onset or first recognition during pregnancy. It accounts for 90% of the cases of diabetes mellitus in pregnancy. Family history of diabetes and high body mass index are risk factors for developing gestational diabetes mellitus. In high risk populations, the recurrence risk with future pregnancies is also high. **AIM AND OBJECTIVE:** 1) to study the proportion of GDM among pregnant women between 24 to 28 weeks of gestation. 2) To evaluate and compare the occurrence of GDM in antenatal cases with respect to risk factors e.g.; family history of diabetes, prematurity, history of foetal loss and congenital anomaly. **MATERIAL AND METHODS:** In this hospital based study, 100gm of oral glucose tolerance test (OGTT) according to Carpenter and Coustan modification of the National Diabetes Data Group was done in women coming for antenatal checkup between 24 to 28 weeks of gestation irrespective of presence or absence of risk factors for GDM. Data was compiled and statistically analyzed. **RESULTS:** In this study it was observed that 11(5.3%) women developed GDM out of 206 women. All GDM patients have one or more risk factors. Age >25 years (63.6%) fetal loss (36.3%), BMI (33.3%) are common risk factors followed by family history of diabetes (27.3%). **CONCLUSION:** Family history of diabetes and past history of congenital anomalies are statistically significant in GDM group as compared to non GDM.

KEYWORDS: Gestational Diabetes Mellitus, Ogtt, Pregnancy, Congenital Anomaly, Family History of Dm.

INTRODUCTION: Diabetes is estimated to complicate 2-5% of all pregnancies of which 90% of those are detected during pregnancy i.e. Gestational Diabetes Mellitus (GDM) and the rest are overt or pregestational i.e. either Type 1 or Type 2 . According to ADA, approximately 7% of all pregnancies are complicated by GDM resulting in more than 2,00,000 cases annually.^[1,2,3] The better understanding of maternal glycemic control and of insulin has reduced the perinatal mortality to 25%.^[4]

AIM: To study the proportion of GDM among pregnant women between 24 to 28 weeks of gestation.

OBJECTIVE:

1. To estimate the proportion of GDM in pregnant women.
2. To evaluate and compare the occurrence of GDM in antenatal cases with respect to risk factors.

Review of Literature: Diabetes in pregnancy was first described by Bennewitz in Germany (1826). He described a women with recurrent glycosuria and intense thirst in 3 successive pregnancies.^[5] In 1967, the term "gestational diabetes" was probably first used by Jorge Peterson in Copenhagen. The

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discovery of insulin in 1921, by Banting and Best changed the outlook for the pregnant diabetic patient completely.^[1]

Definition: GDM is defined as carbohydrate intolerance of variable severity with onset or first diagnosed during pregnancy.^[6] The definition was first accepted in the First International Workshop.^[5]

Clinical classification of diabetes mellitus in pregnancy

1. Type 1 or insulin dependent diabetes mellitus.
2. Type 2 or non-insulin dependent diabetes mellitus.

MATERIAL AND METHODOLOGY:

INCLUSION CRITERIA: Women coming for antenatal check-up between 24 to 28 weeks of gestation irrespective of presence or absence of risk factors for GDM were included in the study.

EXCLUSION CRITERIA: Cases of pre-existing diabetes.

Method of Performing Ogtt: 100gm of OGTT (Carpenter and Coustan modification of the National Diabetes Data Group) was done in the following manner. The patient should be fasting for at least 8 to 10 hours before the test. After drawing the fasting sample, patients were asked to drink 100gm of glucose dissolved in 200-400 ml of water within 5 min. Subsequent blood samples were done at 1,2 and 3 hours using glucose strips and glucometer.

Fasting blood glucose: 95mg/dl

1. 1 hour glucose: 180mg/dl.
2. 2 hour glucose: 155 mg/dl.
3. 3 hour glucose: 140 mg/dl.

More than or equal to 2 of the 4 values should be elevated for the test to be positive.

At least 3 days of unrestricted carbohydrate diet and physical activity.

- HbA1c >6.5 – diabetes.
- 5.7 to 6.4 – prediabetes.

(ADA revised diabetes guidelines December, 2009)

Risk factors:

1. Age > 25 years.
2. Family history of diabetes.
3. BMI>25kg/m².
4. GDM in previous pregnancy.
5. Macrosomia in previous pregnancy.
6. Congenital anomaly, prematurity, unexplained foetal loss in previous pregnancy.

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OBSERVATION AND RESULTS: In this study 206 pregnant women in gestational period of 24 to 28 weeks according to selection criteria listed in material and method.

Fig. 2: Groups in Present Study

Fig. 3: Parity Distribution in Present Study

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Fig. 4: Family History of GDM in Present Study

Fig. 5: Congenital Anomalies in Present Study

Fig. 6: Risk Factors in Present Study

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Fig. 7: BMI in Present Study

Factors		GDM	Non GDM
Insulin Resistance	Present	2(18.2%)	6(3.1%)
	Absent	9(81.8%)	189(96.9%)
Macrosomia	Present	1(9.1%)	3(1.5%)
	Absent	10(90.9%)	192(98.5%)
Prematurity	Present	0	6(3.1%)
	Absent	11(100%)	189(96.9%)

Table 1: Risk factors of GDM

DISCUSSION: Fifth International Workshop Conference on GDM recommend that GDM incidence studies are of high priority and data remains insufficient. It is important to detect GDM as women with GDM are associated with increased risk of developing TYPE 2 diabetes mellitus. Early detection helps in better maternal and fetal outcome.

Study	Prevalence
Tan et al. ^[7]	8.2%
Kumar et al. ^[8]	5.5%
Present study	5.3%

Table 2: Prevalence of GDM

Risk factors	Dixon DRD et al. ^[9]	Jindal et al. ^[10]	Seshiah et al. ^[11]	Present study
Age(>25 years)	82.2%	22.2%	47.3%	40.8%
Past history of fetal loss	0.5%	14.66%	–	13.59%
Past history of congenital anomalies	–	2.3%	–	1.9%
Past history of gdm	2.1%	2.33%	–	0.4%

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Family history of diabetes mellitus	7.7%	10%	32.3%	8.3%
Past history of prematurity	-	-	-	2.3%
Bmi	-	-	21.4%	11.1%
Past history of macrosomia	14.5%	5.33%	-	1.9%

Table 3: Prevalence of risk factors in study population

Risk factors	Dixon et al ^[9]	Jindal et al ^[10]	Seshiah et al ^[11]	Present study
Age(>25 years)	90.4%	44.4%	-	63.6%
Past history of fetal loss	2.7%	44.4%	-	36.3%
Past history of congenital anomalies	-	3.7%	-	18.2%
Past history of GDM	19.4%	22.2%	-	9%
Family history of diabetes	22.7%	22.2%	19.4%	27.3%
Past history of macrosomia	29.2%	29.6%	-	9.1%
Past history of prematurity	-	-	-	0%
BMI	-	-	22.7%	33.3%

Table 4: Prevalence of risk factors in GDM Patient

CONCLUSION: The following are salient features observed:

1. 5.3% of study population had GDM tested by OGTT.
2. 72.7% of GDM patient had 1 risk factor.
3. 72.7% of GDM patients were multigravida and 27.3% were primigravida.
4. All GDM patient have one or more risk factors. Age >25 years (63.6%)fetal loss (36.3%),BMI(33.3%) are common risk factors followed by family history of diabetes (27.3%).
5. Family history of diabetes and past history of congenital anomalies are statistically significant in GDM group as compared to non GDM.

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FINANCIAL OR OTHER

COMPETING INTERESTS: None

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Date of Submission: 13/03/2015.
Date of Peer Review: 14/03/2015.
Date of Acceptance: 26/03/2015.
Date of Publishing: 08/04/2015.