

Maternal and Neonatal Outcomes of Gestational Diabetes Mellitus

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ABSTRACT

Objective: To assess the maternal and neonatal outcomes of gestational diabetes mellitus.

Method: This hospital based study was carried out in the department of Obstetrics & Gynaecology CMH Malir Karachi from 1st Nov 2007 to 31 Oct 2008. A total of 30 patients diagnosed as having GDM were selected for this study. The data on maternal and neonatal outcomes were collected and analyzed.

Results: Over all complication rate observed in our study is 36.7%, both minor and major complications. Minor complications (50%) were classified as liquor problems (oligo and polyhydramnios), interventional deliveries, neonatal hypoglycaemia, hyperbilirubinemia and macrosomia. Major complications (36.7%) observed were abortions, IUGR (intrauterine growth retardation), IUD (intrauterine death), CPD (cephalopelvic disproportion), ectopic pregnancy, neonatal death, malformations and termination of pregnancy due to anomalies.

Conclusion: It is essential for care to be provided during these pregnancies with pre-pregnancy counseling on preconception glycemic control and to reduce the risk of congenital malformations and stillbirths. Strict antenatal care must include monitoring the mother for diabetic complications to reduce the risk of other maternal and fetal complications.

Key words: Gestational diabetes mellitus, LSCS, congenital anomalies, IUGR.

INTRODUCTION

Gestational diabetes is a type of type-2 diabetes that starts during pregnancy¹. The term gestational diabetes refers to hyperglycemia occurring for the first time during pregnancy. Also defined as carbohydrate intolerance of variable severity with onset or first recognition during pregnancy.² It is a condition in which the glucose level is elevated and other diabetic symptoms appear during pregnancy in a woman who has not previously been diagnosed with diabetes³. In most cases, all diabetic symptoms disappear following delivery. However, women with gestational diabetes have an increased risk of developing diabetes later in life especially if they were overweight before the pregnancy.⁴ Repeated pregnancy may increase the likelihood of developing permanent diabetes, particularly in obese women. Long term studies show that some 80% of women with gestational diabetes ultimately develop permanent clinical diabetes requiring treatment.

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Women with GDM are a heterogeneous group and may include those with unrecognized pre-existing non-insulin-dependent diabetes (type 2) and also a small number with insulin-dependent diabetes.

Unlike other types of diabetes, gestational diabetes is not caused by a lack of insulin, but by blocking effects of other hormones on the insulin that is produced, a condition referred to as insulin resistance³.

Gestational diabetes affects about 4% of all pregnant women⁵. It usually begins in the fifth or sixth month of pregnancy (between the 24th and 28th weeks). Most often, gestational diabetes goes away after the baby is born. Diabetes in pregnancy can have serious consequences for the mother and the growing fetus. The severity of problems often depends on the degree of the mother's diabetic disease, especially if she has vascular (blood vessel) complications and poor blood glucose control. Women with gestational diabetes may be non-insulin dependent or insulin dependent.

Gestational diabetes mellitus is associated with significant fetal and neonatal morbidity and mortality. It is a definitive risk factor for the future development of type-II diabetes mellitus in the mother. The presence of GDM has implications for both the baby and the mother. Although there is no evidence that perinatal mortality is increased in pregnancies with

treated GDM, some studies have shown perinatal mortality to be increased in untreated GDM^{6,7,8}. GDM is associated with increased perinatal morbidity, the characteristics of which are the same as for infants of mothers with overt diabetes (e.g., macrosomia, neonatal hypoglycaemia, hyperbilirubinaemia, respiratory distress syndrome)⁹.

MATERIALS AND METHODS

This hospital based study was carried out in the department of Obstetrics & Gynaecology CMH Malir Karachi from 1st Nov 2007 to 31 Oct 2008. A total of 30 patients diagnosed as having GDM were selected for this study. The data on maternal and neonatal outcomes were collected and analyzed. Women diagnosed with GDM were studied for maternal and neonatal outcome during the study period. Data on maternal age, with complications in current pregnancy and mode of current delivery were collected as well as data on infant birth weight, congenital anomalies/neonatal complications were collected. The regime followed for screening of GDM for all the registered patients entailed a random blood glucose testing during a booking visit, fasting blood glucose levels, a screening glucose challenge test around 24-28 weeks' gestation, followed by an OGTT if the tests were outside normal limits or if the risk factors like impaired random blood glucose levels, age more than 30 years, multi gravid or multi parity, obesity, history of GDM in previous pregnancy, family history of DM and bad previous obstetrical history was present.

The statistical analysis was performed using SPSS statistical package, version 11.0 the categorical data was compared using chi square test and continuous data was analyzed with T-test. The P value less than 0.05 were considered statistically significant.

RESULTS

The overall mean maternal age was 28.93±3.73 years with minimum of 21 years and maximum 37 years of age. 11 (36.7%) developed complications (major and minor) during current pregnancy. 8 (26.7%) had oligohydramnias, 12 (40%) had adequate liquor and 8 (26.7%) with polyhydramnias. 10 (33.3%) patients had normal vaginal delivery while remainder 20 patients (66.7%) had interventional deliveries out of these interventional 15 (50%) had LSCS, 3 (10.0%) had instrumental deliveries while 2 patients (6.7%) had termination of pregnancy due to major congenital anomalies. The 2 patients had congenital anomalies of the fetus and had termination

of pregnancy. P value is (p=0.001) which is statistically significant.

A significant direct correlation was observed with blood glucose fasting levels of the patients and complications in current pregnancy. The P value was (p=.031). A positive correlation was also observed with blood glucose fasting levels of the patients and congenital anomalies of the neonates. The P value was (p=.06). 1(3.3%) neonate out of 9 born to 9 mothers with weights between 80-105kg was macrosomic (large for gestational age). Rest all (96.7%) neonates were normal for gestational age.

Table 1: Complications in Current Pregnancy

Type of complications	Frequency	Percent
Nil	17	56.7
Intra uterine death	1	3.3
Intrauterine growth retardation	5	16.7
Congenital anomalies	2	6.7
Cephlo Pelvic Disproportion	2	6.7
Intrauterine growth retardation / neonatal death	1	3.3
Total	30	100.0

Table 2: Congenital anomalies

Anomaly	Frequency	Percent
Yes	2	6.7
No	28	93.3
Total	30	100.0

DISCUSSION

In this study a strong correlation between age of patients, weight of patient, number of gravida and parity, previous history of gestational diabetes, complications in previous pregnancies and family history of diabetes mellitus with maternal and fetal outcomes was observed. These observations can be compared with the previous studies with respect to age^{10,11,12} and risk factors like parity, previous history of GDM, family history of DM and obesity^{13,14,15}.

Over all complication rate observed in our study is 39.3%, both minor and major complications. Minor complications were classified as liquor problems (oligo and polyhydramnios), interventional deliveries, neonatal hypoglycemia, hyperbilirubinaemia and macrosomia. Major complications observed were abortions, IUGR, IUD, CPD, ectopic pregnancy, neonatal death, malformations and termination of pregnancy due to anomalies. These findings are consistent and can be compared with the other studies¹⁶. This rate is quite a significantly less as compared to the complications in the previous pregnancies of these patients i.e., 85.7%. This difference may be correlated with the regular follow up, early diagnosis, tight glycemic control and regular monitoring of HbA1c to monitor the maintenance of glycemic control.

A randomized controlled trial showed that treatment of gestational diabetes reduced serious perinatal morbidity, and may also improve the health-related quality of life of pregnant women¹⁷.

According to some studies, perinatal outcome does not vary significantly among women with GDM who are treated with diet alone or with diet and insulin.¹⁸ In this study also, there was no significant difference between these 2 groups and we did not find higher rates of perinatal complications in the group treated with insulin alone. This result, which is consistent with the results of other studies¹⁹, suggests that insulin therapy is effective in achieving the treatment goal.

Therapeutic goals for euglycemia may not always be easily set or achieved in practice^{20,21} and it is therefore difficult to improve all complications with treatment and follow up. Yet, the effect of treatment with restricted diet or insulin, as necessary, has been remarkable in this study.

Depending upon the population studied and the diagnostic criteria employed, 1–14% of all pregnancies are complicated by GDM²². Women who belong to ethnic groups with a high prevalence of diabetes mellitus, have a first-degree relative with diabetes or have previous history of abnormal glucose tolerance or bad obstetric outcome are at the greatest risk for developing GDM^{23,24,25}.

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