

Diabetes mellitus in pregnancy

¹Dr. Dinesh Sharma, M.S., Department of Obstetrics and Gynaecology, CH MGMSC Khaneri, Rampur, Bushahr (HP).

²Dr. Satish Kumar, M.D., Department of Anaesthesiology, CH MGMSC Khaneri, Rampur, Bushahr (HP).

Corresponding Author: Dr. Satish Kumar, M.D., Department of Anaesthesiology CH MGMSC Khaneri, Rampur, Bushahr (HP).

Citation this Article: Dr. Dinesh Sharma, Dr. Satish Kumar, “Diabetes mellitus in pregnancy”, IJMSIR- January - 2022, Vol – 7, Issue - 1, P. No. 246 – 248.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: The study was conducted to review maternal outcome in pregnancy with diabetes

Methods: Study group used single step 75gm oral glucose tolerance test (OGTT) test recommended by WHO for GDM diagnosis.

Results: 45% patients had polyhydramnios and 38% developed preeclampsia. Preterm labor was common in 23% of GDM patients.

Conclusions: There was significant fetomaternal morbidity in patients with diabetes mellitus. Early diagnosis and treatment reduce the maternal outcome.

Keywords: Maternal outcome, Gestational diabetes mellitus, Glycemic control

Introduction

Gestational diabetes mellitus (GDM) is defined as any degree of glucose intolerance with the onset or first time recognized during pregnancy with or without remission after the end of pregnancy.¹

Women with gestational diabetes are characterized to have a relatively diminished insulin secretion and pregnancy induced insulin resistance primarily present in the skeletal muscle tissue. Normal pregnancy is considered to be a diabetogenic state characterized by

exaggerated amount of insulin release, associated with decreased sensitivity to insulin at cellular levels. These changes are results of the progressive rise in the levels of estrogen, progesterone, human placental lactogen, cortisol and prolactin as pregnancy advances. Many of these hormones are insulin antagonists which causes insulin resistance in the mother and cause abnormal glucose tolerance in some women rendering them to develop gestational diabetes.²

The magnitude of GDM varies according to the country and the ethnic groups. The life style, educational status, family history of diabetes and other factors play an important role. Based on National Diabetes Data Group criteria, the percentage of women who develop GDM was 4%. However, the fourth international workshop conference on Gestational Diabetes showed that the percentage of pregnant women developing GDM increased to 7% resulting in more than 200,000 cases annually.³

Maternal complications in GDM include increased incidence of asymptomatic bacteriuria, urinary tract infections, increased incidence of pre-eclampsia, polyhydramnios which may increase the incidence of preterm labor, placental abruption and post-partum

hemorrhage and increased risk of operative delivery. The various fetal complications include intra uterine death, macrosomia, and shoulder dystocia, increase incidence of respiratory distress syndrome, hypoglycemia, hypocalcemia, congenital malformations, polycythemia, and hyperbilirubinemia. Long term complications include obesity, development of type 2 diabetes mellitus during childhood, impaired motor functions and higher rates of in attention deficit syndrome.⁴

Material and Methods

100 patients with DM with pregnancy who were in criteria were studied for fetomaternal outcome due to DM. Informed consent was taken from all the patients. Detailed history was taken including age, gestational age, history of still birth or pregnancy loss, family history of diabetes, past history of diabetes, obstetric history. Detailed examination was done. Various parameters noted were mode of delivery, fetal weight, maternal and neonatal complications, and neonatal intensive care admission. Data were analyzed by Epi-info software.

Results

Table 1: Demographic variable.

Mean age	26.21±4.32 Yrs
Family history present	34(34.00%)
BMI	25.32±2.38 Kg/mt ²

Mean age of patients was 26.21±4.32 Yrs.

Table 2: Maternal complications among groups.

Polyhydramnios	45(45.00%)
Pre-term labor	23(23.00%)
Pre-eclampsia	38(38.00%)
APH	5(5.00%)
IUGR	2(2.00%)
PPH	1(1.00%)
Mean birth weight	3.22±0.88 Kg

Table 2 shows various maternal complications. 45% patients had polyhydramnios and 38% developed preeclampsia. Preterm labor was common in 23% of GDM patients.

Discussion

Over past years studies have strongly indicated that untreated diabetes during pregnancy is associated with higher rates of maternal morbidity and mortality.

The purpose of screening and management of DM is to prevent stillbirth, congenital anomalies, recurrent abortion, pre-eclampsia, intra uterine death and decrease incidence of macrosomic babies hence reducing maternal and perinatal morbidity and mortality.

The findings of the present study confirmed that DM patients are liable to have poor pregnancy outcomes.

Registered patients had regular antenatal visits and good glycemic control. Emergency patients had poor glycemic control leading to more maternal and fetal complications than registered patients. In present study mean birth weight 3.22±0.88 Kg. A study at Thomas B et al, shows 45.2% of babies are having birth weight between 2.6-3.9kg and 8.1% babies had weight ≥4kg indicating good glycemic control.⁵

Study from south India showed age >25 years is considered as a risk factor for GDM.⁶ In our study maximum no. of patients were of 20-29 years of age.

In present study family history were present in 34.00% cases, comparing with Di Cianni et al. reported that DM was more prevalent in women with positive family history.⁷ Yang et al. reported that pregnant women with a family history of diabetes in 1st degree relatives had 2 fold increased risk of DM as compared to those without positive family history of diabetes in 1st degree relatives.⁸

Several studies^{6,7} indicate a positive correlation between GDM and development of pre-eclampsia which was 38.00% in our study.

Conclusion

We concluded that proportion of pregnancy with diabetes was less, probably because universal screening was not feasible due to certain constraints and probably because of improvement in medical and obstetric care at secondary level fewer patients were referred to tertiary care hospital. Pregnancy with diabetes was more common in younger age group. Educating patients about regular antenatal care and proper monitoring of blood glucose level are important measures to reduce maternal and fetal complications. Universal screening and management by team approach of obstetrician, diabetologist, anesthetist, physician, neonatologist can reduce fetal-neonatal maternal morbidity and mortality associated with pregnancy with diabetes.

References

1. Shingala KD, Shah SR, Vyas RC, Parikh PM. Fetomaternal outcome in patients with diabetes mellitus in pregnancy. *Int J Reprod Contracept Obstet Gynecol* 2019;8:2701-4
2. Williams JW, Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Dashe JS. *Williams obstetrics*. 25th Edition. New York: McGraw - Hill; 2018:1107.
3. O'sullivan JB, Mahan CM. Criteria for the oral glucose tolerance test in pregnancy. *Diabetes*. 1964;13:278-85.
4. Landon MB, Mele L, Sc M, Spong CY, Carpenter MW, Ramin SM, et al. NIH Public Access. 2014;117:218-24
5. Thomas B. The prevalence, risk factors, maternal and fetal outcomes in gestational diabetes mellitus. *Int J Drug Develop Res*. 2012;4(3).
6. Seshiah V, Balaji V, Balaji MS, Paneerselvam A, Arthi T, Thamizharasi M, et al. Prevalence of gestational diabetes mellitus in South India (Tamil Nadu): a community based study. *J Assoc Physicians India*. 2008;56:329-33.
7. Di Cianni G, Volpe L, Lencioni C, Miccoli R, Cuccuru I, Ghio A, et al. Prevalence and risk factors for gestational diabetes assessed by universal screening. *Diabetes Res Clin Pract*. 2003;62(2):131
8. Clausen TD, Mathiesen ER, Hansen T, Pedersen O, Jensen DM, Lauenborg J, et al. High prevalence of type 2 diabetes and pre-diabetes in adult offspring of women with gestational diabetes mellitus or type 1 diabetes: the role of intrauterine hyperglycemia. *Diabetes Care*. 2008;31(2):340-6.