ORIGINAL RESEARCH

Foetomaternal outcome in women with gestational diabetes mellitus

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Received: 17 October, 2021 Accepted: 21 November, 2021

ABSTRACT

Background: A metabolic condition known as gestational diabetes mellitus (GDM) is characterized by varying degrees of glucose intolerance that is initially identified during pregnancy and is likely to go away when the pregnancy is over. The present study was conducted to evaluate foetomaternal outcomes in women with gestational diabetes mellitus. **Materials & Methods:** 86 pregnant women with gestational diabetes mellituswere screened for universal screening for GDM using a 2-h 75 g OGTT. In this screening test, 75 g oral anhydrous glucose was given and then after 2 h, the blood glucose level was measured. If this level is more than 140 mg/dl then it is considered as screening and diagnostic of GDM. The OGTT test was repeated for the patient who had a negative result on screening test but had at least one risk factor for GDM at 32–36 weeks of gestation. **Results:** Parity was Primi in 40, 2nd gravida in 24, and 3rd gravida in 22. BMI <18 kg/m2 was seen in 12, 18-24.9 kg/m2 in 28, and >25 kg/m2 in 46 patients. The difference was non- significant (P> 0.05). The mode of delivery was cesarean in 49 and vaginal in 37 cases. Complications found were hypoglycemia in 4, hyperbilirubinemia in 2, and transient tachypnoea in 7 patients. The difference was significant (P< 0.05). Maternal complications were APH in 3, PPH in 8, PIH in 25 and pre- term labor in 6 cases. The difference was significant (P< 0.05). **Conclusion:** Given the rising incidence of GDM risk factors, pregnant women with GDM are likely to experience negative consequences. Prenatal GDM screening is essential for early detection and treatment during the antennal visit, which will enhance the outcomes for both the mother and the fetus. Women who have GDM can avoid developing diabetes mellitus in the future.

Keywords: gestational diabetes mellitus, cesarean, vaginal

INTRODUCTION

A metabolic condition known as gestational diabetes mellitus (GDM) is characterized by varying degrees of glucose intolerance that is initially identified during pregnancy and is likely to go away when the pregnancy is over. It is among the most prevalent pregnancy problems and is linked to unfavorable results for both the mother and the unborn child. Both internationally and in India, the prevalence of GDM is rising.

14% of pregnant women are diagnosed with gestational diabetes mellitus (GDM), which impacts up to 200,000 cases annually in the United States.[1]

Macrosomia, birth trauma, shoulder dystocia, newborn hypoglycemia, hyperbilirubinemia, hypocalcemia, polycythemia, and respiratory distress syndrome are all consequences of gestational diabetes mellitus (GDM), which exposes the infant to hyperglycemia.[2] Chronic hyperglycemia exposure causes obesity, a high incidence of metabolic disorders, and intrauterine fetal mortality. Cardiovascular problems and the later onset of Type 2 diabetes mellitus are examples of maternal unfavorable consequences. Advanced mother age, ethnicity, obesity or overweight, many pregnancies, a family history of Type 2 diabetes mellitus, genetic factors, polycystic ovarian syndrome, and a prior history of gestational diabetes are risk factors for the development of GDM. Cigarette smoking, environmental (pollution), psychological (depression), and physically inactive lifestyles prior to and during pregnancy are other newly identified risk factors.[3]

The International Association of Diabetes and Pregnancy Study Group (IADPSG) proposed more stringent diagnostic thresholds for GDM.[4] These new diagnostic criteria (fasting plasma glucose level ≥ 5.1

mmol/l and/or 1-h plasma glucose level ≥ 10.0 mmol/l and/or 2-hours plasma glucose level ≥ 8.5 mmol/l) have been adopted by the American Diabetes Association in 2010, the World Health Organization (WHO) in 2013 and the International Federation of Gynaecology and Obstetrics in 2015.[5,6]The present study was conducted to evaluate foetomaternal outcomes in women with gestational diabetes mellitus.

MATERIALS & METHODS

The present study consisted of 86pregnant women with gestational diabetes mellitus. All subjects gave their written consent for the participation in the study. Data such as name, age, etc. was recorded. Detailed history and a thorough clinical examination were carried out. Parameters such as parity, socioeconomic status (SES), family history of DM, and past history of GDM were recorded. Assessment of BMI, BP, and fasting blood sugarwas done. All the patients at 24–28 weeks of gestational age were screened for universal screening for GDM using a 2-h 75 g OGTT. In this screening test, 75 g oral anhydrous glucose was given and then after 2 h, the blood glucose level was measured. If this level is more than 140 mg/dl then it is considered as screening and diagnostic of GDM. The OGTT test was repeated for the patient who had a negative result on screening test but had at least one risk factor for GDM at 32–36 weeks of gestation. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Characteristic of GDM patients

Parameters	Variables	Number	P value
Parity	Primi	40	0.75
	2nd	24	
	3rd	22	
BMI (kg/m2)	<18	12	0.81
	18-24.9	28	
	>25	46	

Table I shows that parity was Primi in 40, 2nd gravida in 24, and 3rd gravida in 22. BMI <18 kg/m2 was seen in 12, 18-24.9 kg/m2 in 28, and >25 kg/m2 in 46 patients. The difference was non- significant (P> 0.05).

Table II Assessment of neonatal outcome

Parameters	Variables	Number	P value
Mode of delivery	Cesarean	49	0.53
	Vaginal	37	
Complications	Hypoglycaemia	4	0.05
	Hyperbilirubinemia	2	
	Transient tachypnoea	7	

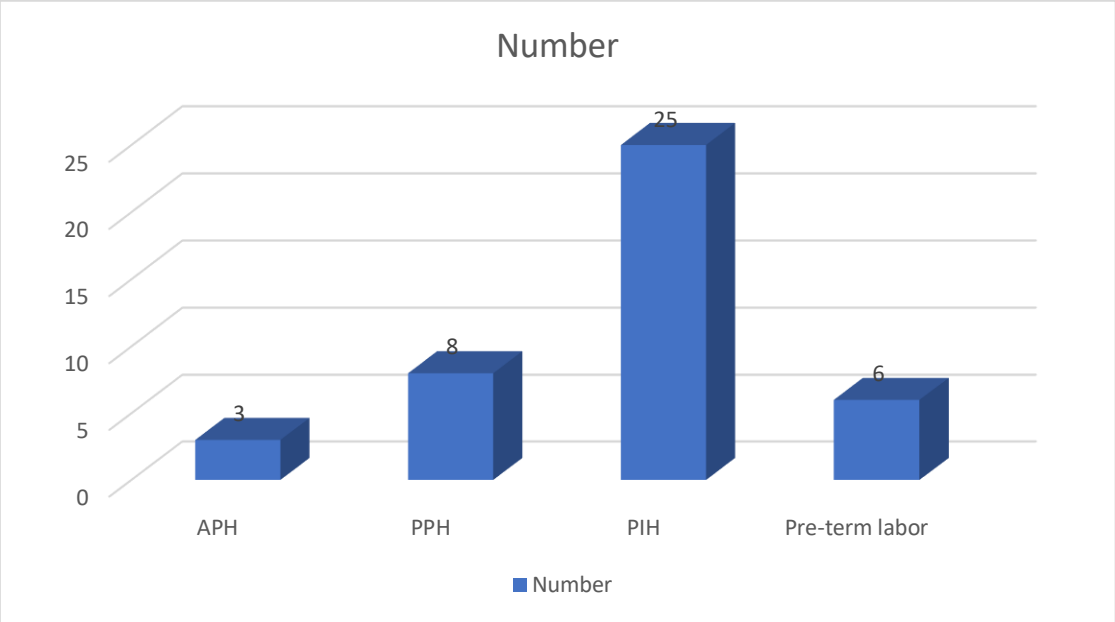
Table II shows thatthe mode of delivery was cesarean in 49 and vaginal in 37 cases. Complications found were hypoglycemia in 4, hyperbilirubinemia in 2, and transient tachypnoea in 7 patients. The difference was significant (P< 0.05).

Table III Assessment of maternal complications

Maternal complications	Number	P value
APH	3	0.05
PPH	8	
PIH	25	
Pre-term labor	6	

Table III, graph I shows that maternal complications were APH in 3, PPH in 8, PIH in 25 and pre- term labor in 6 cases. The difference was significant (P< 0.05).

Graph I Assessment of maternal complications



DISCUSSION

Diabetes mellitus is a worldwide health issue that affects people of all ages and genders. Duncan originally defined gestational diabetes mellitus (GDM) as diabetes that manifests "only during pregnancy, being absent at other times" in 1982.[7] Although the prevalence of diabetes during pregnancy varies greatly, it typically corresponds to the underlying pattern of type 2 diabetes in that group.[8] GDM is defined as hyperglycemia that is initially identified during pregnancy between weeks 24 and 28 but does not fit the criteria for overt diabetes. In the past, the future risk of type 2 diabetes development was used to validate the diagnostic cut-off.[9]Insulin resistance typically increases throughout pregnancy, starting around the middle of the pregnancy and increasing during the third trimester to levels that are similar to those of people with type 2 diabetes. Increased maternal adiposity and the insulin-desensitizing effects of placental hormone secretions seem to work together to cause insulin resistance.[10] Given that insulin resistance quickly resolves after delivery, placental hormones are likely the primary cause of this resistance condition. The second is that in order to make up for the insulin resistance that occurs during pregnancy, pancreatic β cells often secrete more insulin.[11]The present study was conducted to evaluate foetomaternal outcomes in women with gestational diabetes mellitus.

We found that parity was Primi in 40, 2nd gravida in 24, and 3rd gravida in 22. BMI <18 kg/m2 was seen in 12, 18-24.9 kg/m2 in 28, and >25 kg/m2 in 46 patients. Khan Ret al[12] in their study found that the age range for mothers with gestational diabetes was 18–39 years with the mean age of 28.6 years. The majority (100%) of mothers were 20–39 years. Mothers with gestational diabetes were two times more likely to have Caesarean section because of big babies and obstructed labour.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 other complications of Gdm. All mothers with gestational diabetes at postnatal visit were screened for diabetes mellitus and were found to be normal.

We found that the mode of delivery was cesarean in 49 and vaginal in 37 cases. Complications found were hypoglycemia in 4, hyperbilirubinemiain 2, and transient tachypnoea in 7 patients. Casey et al[13] in their study found that a total of 61,209 nondiabetic women with singleton cephalic pregnancies were delivered and 874 were diagnosed with class A_1 gestational diabetes. Women with class A_1 gestational diabetes were significantly older, heavier, of greater parity, and more often of Hispanic ethnicity. Hypertension (17 versus 12%), cesarean delivery (30 versus 17%), and shoulder dystocia (3 versus 1%) were significantly increased in these women compared with the general obstetric population. Infants born to women with class A_1 gestational diabetes were significantly larger (mean birth weight 3581 ± 616 versus 3290 ± 546 g, $P < .001$), and this accounted for the increased incidence of dystocia. The attributable risk for large for gestational age (LGA) infants due to class A_1 gestational diabetes was 12%.

We found that maternal complications were APH in 3, PPH in 8, PIH in 25 and pre- term labor in 6 cases. According to Hakeem et al.[14], 8.6% of pregnant women have gestational diabetes mellitus. There were 148 (21.6%) lower segment cesarean sections and 511 (74.6%) spontaneous vertex deliveries. Among these women, maternal morbidity was 1.2%. These 685 women gave birth to 697 infants in all, including 675

singleton pregnancies, nine sets of twins, and one set of quadruplets. Three kids died during the neonatal period, seven babies died in utero, and 687 babies were born alive. 4.9% of newborns were admitted to critical care. 16 days was the average length of stay in the NICU. Hyperbilirubinemia was the most frequent reason for neonatal NICU hospitalization (41.2%). The following were risk factors for NICU admission: non-SVD delivery,

CONCLUSION

Authors found that given the rising incidence of GDM risk factors, pregnant women with GDM are likely to experience negative consequences. Prenatal GDM screening is essential for early detection and treatment during the antennal visit, which will enhance the outcomes for both the mother and the fetus. Women who have GDM can avoid developing diabetes mellitus in the future.

REFERENCES

1. Magee S, Walden CE, Benedetti TJ, Knopp RH. Influence of diagnostic criteria on the incidence of gestational diabetes and perinatal morbidity. JAMA. 1993;269:609-15.
2. Cosson E. Screening and insulin sensitivity in gestational diabetes. Abstract volume of the 40th Annual Meeting of the EASD. 2004:A350.
3. Dornhorst A, Paterson CM, Nicholls JS. High prevalence of gestational diabetes in women from ethnic minority groups. Diabet Med. 1992;9(9):539-53.
4. Sullivan JB, Mahan CM. Criteria for oral glucose tolerance in pregnancy. Diabetes. 1964;13:278-85.
5. Anjalakshi C, Balaji V, Balaji MS, Ashalatha S, Suganthi S, Arthi T, et al. A single test procedure to diagnose gestational diabetes mellitus, Acta Diabetol. 2009;46:51-4.
6. Hanna FW, Peter SJR. Screening of gestational diabetes: Past, present and future. Diabet Med. 2002;19:351-8.
7. Seshiah V, Balaji V, Madhuri S Balaji, Aruna Sekar, Sanjeevi CB, Anders Green. One-step procedure for screening and diagnosis of gestational diabetes mellitus. J ObstetGynecol Ind. 2005;55:525-29.
8. Agrawal S, Gupta AN. Gestational Diabetes. J Association Physicians of India. 1982;30:203.
9. Narendra J, Muni Choodeppa C, Gurudas A, Ramprasad AV, Medha VT, Vijalakashmi N, et al. Prevalence of glucose intolerance during pregnancy. Int J Diabetes Dev Ctries. 1991;11:2-4.
10. Rosenn B, Miodovnik M, Combs CA, Khoury J, Siddiqi TA. Poor glycemic control and antepartum obstetric complications in women with insulin-dependent diabetes. Int J Gynaecol Obstet. 1993;43:21–8.
11. Inkster ME, Fahey TP, Donnan PT, Leese GP, Mires GJ, Murphy DJ. Poor glycated haemoglobin control and adverse pregnancy outcomes in type 1 and type 2 diabetes mellitus: systematic review of observational studies. BMC pregnancy and childbirth. 2006 Dec;6(1):1-3.
12. Khan R, Ali K, Khan Z. Maternal and fetal outcome of gestational diabetes mellitus. Gomal Journal of Medical Sciences. 2013 Jul 2;11(1).
13. Casey BM, Lucas MJ, McIntire DD, Leveno KJ. Pregnancy outcomes in women with gestational diabetes compared with the general obstetric population. Obstetrics &Gynecology. 1997 Dec 1;90(6):869-73.
14. Al-Hakeem MM. Pregnancy outcome of gestational diabetic mothers: Experience in a tertiary center. Journal of family & community medicine. 2006 May;13(2):55.