DESCRIPTIVE STUDY OF GESTATIONAL DIABETES MELLITUS AND ITS OUTCOME IN A CENTRAL INDIAN HOSPITAL

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ABSTRACT

BACKGROUND

Gestational diabetes mellitus is one of the common complications of pregnancy. It has implications for both mother and the baby. Untreated GDM leads to increased perinatal morbidity and mortality. For the mother, GDM is a very strong risk factor for the development of permanent diabetes in later life. Hence, identification of risk factors and early diagnosis with proper institution of treatment is of paramount importance.

Aim- The aim of this study was to study the pregnancy outcome in diagnosed cases of gestational diabetes mellitus.

Design- This is a descriptive study.

MATERIALS AND METHODS

This was a descriptive study conducted over a period of 2 years in a tertiary care hospital in central India; 90 study subjects were included. All cases were clinically assessed and investigated according to severity of GDM. Appropriate treatment was instituted and they were followed till term. Labour was monitored and the outcome of pregnancy was noted. All data collected was analysed. Results were expressed as numbers and percentages.

RESULTS

The highest incidence of GDM was seen in primigravidas 42.22% and the mean age was 26.5%; 10% cases had history of GDM in previous pregnancy and 14.4% had a family history of diabetes. Insulin in addition to diet control was required in 58.8% cases. Macrosomia was seen in 4.5%. Incidence of IUD was 2.7%, whereas 3.6% study subjects gave birth to congenitally anomalous babies. Incidence of caesarean section was 48.9% and that of PIH was 13.

CONCLUSION

Universal screening rather than screening only those patients having risk factors of GDM should be the norm, as GDM mothers and their babies are at increased risk of unfavourable maternal and foetal outcome. Timely diagnosis and effective glycaemic control by instituting appropriate treatment can decrease if not prevent the maternal and foetal complications to a large extent.

KEYWORDS

GDM, Pregnancy, Outcome, Incidence.

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BACKGROUND

GDM is defined as a carbohydrate intolerance of variable severity with onset or first recognition during pregnancy. Placental hormones and increased fat deposits mediate insulin resistance during pregnancy, thereby blocking insulin action to bind to its receptors. It usually resolves after pregnancy. The presence of GDM has implications for both mother and the baby. Some studies have indicated increased rate of perinatal mortality in untreated GDM.

Although, the risks associated with GDM are well recognised, the impact on the health outcomes of mother and baby is not that clear. GDM is a condition that can be effectively controlled, thereby decreasing the associated risks and eventually leading to less or no complications in mother and delivery of healthy babies.

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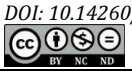

In considering longer term outcomes for the baby, evidence is gradually mounting that GDM adds an intrauterine environmental risk to an already increased genetic risk for the development of obesity and/or diabetes.

For the mother, GDM is a very strong risk factor for the development of diabetes later in life. This study aims at diagnosing GDM as early as possible and institute appropriate therapy, so as to have a favourable outcome for both mother and baby.

MATERIALS AND METHODS

This is a descriptive study, carried out in the Department of Obstetrics and Gynaecology at a Central Indian Hospital over a period of 2 years. This is a study of cases of GDM in relation to pregnancy and its outcome. All patients attending ANC OPD and subsequently diagnosed as GDM (subjects were given 75 g of glucose. Venous plasma glucose was measured after two hours and cases with value of 140 mg/dL or more were labelled as GDM) entered the study after obtaining informed written consent. Study cases were treated with either diet alone or with insulin therapy in addition. They were monitored with blood and urine sugar. They were followed till parturition. Various complications during the course of pregnancy were identified and treated. Labour was monitored and the outcome of pregnancy was noted. In

indicated cases, caesarean section was done. The findings were recorded and all data collected was tabulated and analysed. Results were expressed as number and percentages.

RESULTS

Age (In Years)	Number	Percentage
Less than 21	6	6.67
21-25	41	45.56
26-30	28	31.11
31-35	11	12.22
More than 35	4	4.44
Total	**90**	**100**

Table 1. Distribution of Study Subject according to Age

Out of 90 study subjects, majority were between 21 - 25 years. Minimum numbers were in the age group of more than 35 years.

Gravida	Number	Percentage
Primi	38	42.22
G2	31	34.44
G3	15	16.67
G4 and above	6	6.67

Table 2. Distribution of Study Subjects according to their Obstetric History

Out of 90 study subjects, maximum 42.22% were primigravida and 34.44% were second gravida. Only 6.67% cases were fourth gravid and above.

Risk Factors	Number	Percentage
Age more than 25 years	36	40
Family history of diabetes	13	14.4
GDM in previous pregnancy	9	10
BMI more than 25	41	45.5
Pregnancy loss	5	4.5

Table 3. Distribution of Study Subjects according to the Risk Status

BMI more than 25 and age more than 25 years were the primary risk factors associated with GDM.

Outcome	Number	Percentage
Vaginal delivery	46	51.1
Caesarean section	44	48.9
Congenital Anomaly	4	3.6
Preterm delivery	15	16.6
Macrosomia	5	4.5
IUD	3	2.7
PIH	13	13.6

Table 4. Distribution of Study Subjects according to the Outcome of Pregnancy

The study subjects requiring insulin in addition to diet control is 53 (58.8%).

DISCUSSION

Gestational diabetes is one of the common condition affecting pregnancy. The prevalence of gestational diabetes is going northwards globally. Sedentary lifestyle in urban population is one of the most important contributory factor to increasing incidence of gestational diabetes. Data collected from this study was analysed.

Table 1 shows distribution of study subjects according to the age. In the present study, maximum of 45.56% were in the age group of 21-25 years. Similarly, Seshiah V et al indicated that age less than or 25 years as a risk factor for gestational diabetes.[1] Least cases 4.44% were in the age group of more than 35 years, the youngest being 18 years and the oldest being 39 years. Enid Leikin et al reported a higher incidence of 7.39% cases who were more than 35 years.[2] In our study, the mean age of the subjects was 26.52 years. However, E. Nordlander reported mean age of 31 years.[3] This may be because of late marriages in western countries. Several studies in the past have stated that gestational diabetes is seen in with higher frequency in women beyond the age of 25. This may be as a result of increased incidence of hypertension in pregnant women, dyslipidaemia and increased BMI which are age related metabolic changes.

Table 2 shows distribution of study subjects according to their obstetric history. In the present study, none of the study subjects had parity more than 4. However, Enid Leikin reported 4.54% cases who were more than para 4.[2] This may be because these cases had previous perinatal death, unexplained stillbirth or congenital malformations not compatible with life. Highest incidence of GDM was noted in primigravidas 42.22%.

Table 3 shows distribution of study subjects according to the presence of risk factors for GDM. We, in our study found that age more than 25 years, BMI more than 25, family history of diabetes followed by gestational diabetes in previous pregnancy were the most important risk factors associated with GDM. Other risk factor was previous pregnancy loss. Obese and overweight individuals show hormonal imbalance of carbohydrate regulation mechanism and insulin sensitivity. BMI more than 25 was seen in 45.5% of cases which is similar to what is reported by Hadaegh F et al[4] and Alpana Singh et al (39.1%).[5] This is the reason why non-pregnant obese women considering pregnancy should be aware of the risk of development of GDM and how it can complicate the pregnancy.

Family history of diabetes was present in 14.4% cases. It is a known fact that women with family history of diabetes have more chances of developing gestational diabetes as compared to normal women. Abdulbari Bener et al reported a somewhat higher rate of 31.7% cases of GDM with family history of diabetes.[6] Family history of diabetes mellitus has been reported to be associated with higher chances of developing GDM.[6-9] Several epidemiological studies have time and again identified a family history of diabetes as a primary risk factor for the development of gestational diabetes.[10-12]

In the study conducted by Catherine Kim MD et al, they were of the view that recurrence of gestational diabetes varies between 30% - 80% depending upon race, ethnicity, maternal age and BMI.[13] Our study reported that 10% cases had history of GDM in previous pregnancy. Similarly, Alpana Singh et al quoted that 13% cases had history of GDM in previous pregnancy.[5]

Table 4 shows distribution of study subjects according to outcome of pregnancy. Our study reported a higher rate of caesarean section (48.9%). This may be because of higher

incidence of PIH (13.6%), pre-eclampsia, APH, preterm labour (16.6%), macrosomia (4.5%) and PROM (13.5%). Similar results have been found by different studies that PIH (17.9%) and rates of caesarean section (17.1%) were higher in women with GDM.[14-15] Another study in China also indicated similar rate of complications in GDM mothers. Increased rates of caesarean section may also be due to increased rate of foetal distress in GDM mothers. Macrosomia also contributes to higher rate of caesarean section.

Neonates born to GDM mothers are at increased risk of macrosomia, hyperbilirubinaemia, hypoglycaemia, birth injuries and other complications. Our study reported macrosomia (4.5%) and preterm births (16.6%). Other complications like jaundice and hypoglycaemia were also found. A study by Hong et al found that infants born to gestational diabetes mothers are more likely to be born preterm (10.7%) or have macrosomia (4.3%). Our study reported IUD in 3 cases. Uncontrolled Diabetes can produce sudden unexplained IUD. The aim of early diagnosis and prompt management of GDM during pregnancy by insulin therapy is to prevent neonatal perinatal complications, macrosomia and IUD. Our study reported congenital anomalies in 3.6% cases. Several studies have come to the conclusion that mothers with pre-existing but undiagnosed type 2 diabetes are at a higher risk of having congenitally malformed babies. A study conducted on diabetic women in United Kingdom showed a four-fold increase in congenital malformations than general population.[16] Proper counselling prior to conception and proper control of glycaemia in pre-conception period can reduce the incidence of congenital anomalies.

A need is felt in terms of more research in the field of interventions directed at reducing weight and thereby reducing the impact obesity has on complications of pregnancy, as it is the single most modifiable risk factor frequently associated with gestational diabetes. Education and awareness will also play a vital role in it. Timely diagnosis and effective glycaemic control by instituting appropriate treatment can decrease if not prevented the maternal and foetal complications to a large extent.

CONCLUSION

Universal screening rather than screening only those patients having risk factors of GDM should be the norm, as GDM mothers and their babies are at increased risk of unfavourable maternal and foetal outcome. The adverse outcomes of pregnancy can be greatly reduced by doctors by increasing awareness about the risk factors and at the same time instituting standard treatment inclusive of lifestyle management and dietary control.

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