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Original Research Article

Screening for gestational diabetes mellitus by two step method and the pregnancy outcome: a study in Indian women

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ABSTRACT

Background: In recent times, gestational diabetes is becoming more common Worldwide and complications are seen in fetal development, growth, labour and delivery due to maternal hyperglycemia. Gestational Diabetes Mellitus(GDM) is associated with adverse maternal and fetal outcomes. Among South Asian Population, Indian Women are at high risk of developing carbohydrate intolerance during pregnancy. Hence this study is undertaken to screen for gestational diabetes mellitus by two step method in Indian Women.
Methods: This study was done in 153 nondiabetic pregnant women of gestational age 24-28 weeks, excluding diabetes mellitus diagnosed prior to pregnancy. Two step method was followed in the present study and GDM was diagnosed and the pregnancy outcomes were noted.
Results: In our study the prevalence of GDM is 8.1% by two step method. Most of the women diagnosed with GDM were of age 26-30 yrs (41.66%). Among the women who were diagnosed as GDM, (58.33%) cases required Insulin along with diet control. In our study 33.33% had vaginal delivery, 8.33% had Emergency LSCS and 58.33% had Elective LSCS.
Conclusion: Indian Women have high prevalence of GDM, hence universal screening is essential to diagnose GDM, which will improve the pregnancy outcome.

Keywords: Gestational diabetes mellitus, Glucose challenge test, Lower segment cesarean section, Oral glucose tolerance test

INTRODUCTION

Gestational diabetes mellitus (GDM) is defined as Carbohydrate intolerance of variable Severity with onset or recognition during Pregnancy, irrespective of treatment with diet or Insulin. Gestational diabetes is associated with adverse maternal and fetal outcomes.[1] With rapid urbanization, changing diets, decreasing physical activity, the trend towards delayed marriage and older maternal age as well as the growing epidemics of obesity and type 2 diabetes, the prevalence of GDM may very well be on the rise.[2] Among the ethnic groups in South Asia, Indian Women have the highest incidence of GDM. The prevalence of GDM in India is 16.55%.[3] Hence this study is undertaken for screening GDM in Indian Women, and effective treatment, which will minimize the pregnancy complications due to maternal hyperglycemia.

METHODS

This prospective cohort study was carried out in the department of obstetrics and Gynecology, Shri Sathya Sai Medical College & Research Institute, Tamil Nadu, India from August 2015 to July 2016. 153 nondiabetic pregnant women of gestational age 24-28 wks. presenting to the

Antenatal outpatient department were selected during the study, excluding diabetes mellitus diagnosed prior to pregnancy. The antenatal women were screened for GDM by administering 50 g Glucose challenge test, irrespective of last meal taken. Patients with Screening test value of >130mg/dl at 1 hour were considered screening test positive and subjected to standard 2 hour, 75 grams oral Glucose Tolerance Test (OGTT). OGTT is done by administering 75g oral glucose mixed in 200 ml of plain water and three blood samples were drawn at 0,1 and 2 hrs and the results were tabulated. Among them GDM was diagnosed according to the American Diabetes Association Criteria. Antenatal women were screened for GDM after getting informed written consent. Women diagnosed as GDM were allotted appropriate treatment with diet alone or diet plus insulin therapy. All The screened women were followed up during the antenatal visits. Out of the 153 patients, 5 were lost to follow up. Hence the remaining 148 women were considered for the present study and the pregnancy outcome of this cohort Population was recorded.

The inclusion criteria are singleton pregnancies with gestational age 24 to 28 weeks, irrespective of age, parity or socioeconomic status.

The exclusion criteria are women who were known diabetic T1, T2, women suffering from very chronic illness, and multiple pregnancies.

Statistical analysis

The data collected were analyzed using SPSS software version 20. odds ratio, P value were estimated.

RESULTS

In this study 148 antenatal women were considered for screening GDM and the data were analyzed. 12 women were diagnosed as GDM by two step method. The prevalence of GDM in our study was 8.1%.

Table 1: Prevalence of GDM.

No of cases	GDM	Prevalence
148	12	8.1%

The majority of the cases 41.66% were of age group 26-30 yrs. The prevalence of GDM increases with age. Age >25 yrs was the most common indication for screening.

In the present study the prevalence of GDM was 41.6% in primigravida and the prevalence of GDM was 58.3% in multigravidae. Among the 148 cases, 12 cases were diagnosed as GDM by ADA criteria and the odds ratio = 22.2 and the P value <0.001 (significant).

All the women diagnosed as GDM were advised to follow diabetic diet. 41.66% cases required diet alone and 58.3% cases required diet along with insulin.

Table 2: Gravida and its correlation with GDM.

Gravida	No. of cases	Percentage
Primi	5	41.6%
Multi	7	58.3%
Total	12	100%

Table 3: Mode of treatment in GDM patients.

Treatment	No of cases	Percentage
Diet alone	5	41.66%
Diet+ Insulin	7	58.33%

In our study 33% cases had spontaneous Vaginal delivery. 8% cases had Emergency lower segment caesarean section and 58% cases had Elective LSCS. The most common indication for LSCS was previous caesarean section with GDM.

Table 4: Mode of delivery in GDM patients.

Mode	No of cases	Percentage
Elective LSCS	7	58.33%
Emergency LSCS	1	8.33%
Vaginal Delivery	4	33.33%

DISCUSSION

In the Indian context, screening for GDM is essential in all pregnant women, as Indian women have 11 fold increased risk of developing GDM compared with caucasian women.

In a study by Rajesh rajput et al, the prevalence of GDM was 7.1% and they concluded that prevalence of GDM increased with increasing age group.[4]

In a study by De Sisto CL et al, the prevalence of GDM was 9.2% and the GDM patients were of >26 years age group.[5]

In our study the Glucose challenge Test is done by drinking of 50g glucose solution and glucose levels are measured at 1 hour. The cut off point for screen positive is taken as 130 mg/dl instead of 140 mg/dl, and a higher proportion of women are detected and the sensitivity is improved. If the level found are above these cut-off values, the Patient has to undergo an oral glucose tolerance test (OGTT) after an overnight fast before the diagnosis is made. This method was recommended by the fifth international workshop conference on GDM and by ADA.[6]

In a study by Van Leeuwen et al, 50g GCT had sensitivity of 74% and specificity of 77%. In the present study, 50g GCT had sensitivity of 83.3% and specificity of 81.6% which is comparable to the study by Saleh et al, they had sensitivity of 88% and specificity of 84%.[7,8]

In a study by Qummry Ali Hindi et al, the GDM Women who underwent Elective LSCS was 55% and Emergency LSCS 20% and 25% had Vaginal delivery. In the present study, 58.3% cases underwent Elective LSCS, 8.3% Emergency LSCS and 33.3% had Vaginal delivery.[9]

In a Cochrane review by Alwan et al, the authors compared women who were randomly assigned to receive oral medication versus Women randomly assigned to receive insulin, they found that women who received oral medication had a 54% decrease in the risk of LSCS, compared to women who received insulin. In a study by Katrien Benhalima et al, the modified 2 step screening strategy with GCT and clinical risk factors improved the diagnostic accuracy.[10,11]

As proved by earlier studies, in our study also the prevalence of GDM is 8.1% and majority of GDM patients were of age group 26-30 yrs. 58.3% of GDM cases were multi gravidae. The increased risk factors for GDM were increased maternal age and previous history of GDM. In our study authors have employed universal screening strategy.

CONCLUSION

Diagnostic efficacy of two step method improved the detection of GDM, especially in the high prevalence group. More number of GDM is diagnosed with two step method. The fact that the first step of the two step approach can be done without the women being in a fasting state, can thus be an advantage. Hence we suggest that two step method can be used for universal screening in high prevalence group women. Further studies are needed to evaluate the efficacy of two step method for screening Gestational diabetes mellitus.

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