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RESEARCH ARTICLE

ONE STEP PROCEDURE FOR SCREENING AND DIAGNOSIS OF GESTATIONAL DIABETES MELLITUS

Mandavi Rai [1], Tulsi Bhatia [2], J.N.Narshetty[3]

[1,2,3]Department of OBGY, MGM institute of Health Sciences, Navi Mumbai, India

Correspondence to: Dr. Mandavi Rai (mandavirai@ymail.com)

ABSTRACT:

Background: Clinical recognition of GDM is important because proper recognition and intervention can reduce the well described GDM associated perinatal morbidity and mortality. The frequency of GDM is highly variable and generally reflects the underlying pattern of NIDDM in the particular population. There is no universal agreement on the screening strategies and diagnostic criteria of GDM. Hence, there is a need to identify the single step procedure which serves both as a screening as well as a diagnostic tool for GDM

Methods: MGM institute of health sciences, Navi Mumbai between November 2012 and November 2014. 100 pregnant women attending the antenatal clinic at the MGM institute. The study was conducted in the department of obstetrics and gynaecology at of health sciences between 24-32 weeks of pregnancy irrespective of maternal age and gravidity and presence or absence of clinical or historic risk factors for GDM are considered for inclusion in the study

Results: In 100 women taken for study the incidence of GDM was 11%. The accuracy, positive predictive value, sensitivity and specificity of the 75g OGTT was higher than 50g GCT.

Conclusions: On analysis of all the parameters the sensitivity of 50g GCT was found to be significantly less compared to 75g OGTT in detecting GDM. In the Indian context with higher prevalence of GDM and where universal screening is mandatory, it is feasible and conductive to opt for 75g OGTT. The 2 step procedure of screening with 50g GCT and then diagnosing GDM based on the cut off values with 100g or 75 g is not practical as the pregnant women have to visit the clinic twice and the number of blood samples drawn vary from 3-5 which the women resent. Hence for universal screening a single GCT with 75g oral glucose and diagnosing women with >140mg% as GDM is recommended.

Keywords: GDM, OGTT , positive predictive value, mortality, morbidity, post prandial, insulin, carbohydrate

INTRODUCTION:

GDM is "carbohydrate intolerance of variable severity with the onset and first recognition during present pregnancy". Virtually all new causes of DM in pregnancy are a transient form of type 2 DM. A small proportion of cases of de novo DM are found to persist after pregnancy. Most of these are type 2 DM. However rarely type1 DM will arise during pregnancy simply as a matter of coincidence.[1] GDM is a controversial clinical entity believed to be unmasking of a compensated metabolic abnormality characterized by relative insulin deficiency and increased insulin resistance.

Pregnancy is a special situation as far as pregnancy is concerned in which potential adverse effects of the foetus and mother is paramount importance and should be clearly identified[2].

Jarrett[3] wrote that GDM is non entity whose only clinical associations with an increased

risk of mother subsequently becoming diabetic.

Hunter and Milner[4] stated that "GDM is a diagnosis still looking for a disease", whereas Beard and Hoet[5] concluded that GDM is a clinical entity associated with increased foetal and maternal morbidity.

It has been demonstrated that perinatal and maternal morbidity among GDM can be reduced with application of a systemic approach to the identification and management of disease.

➢ Diabetes mellitus is a chronic disorder of carbohydrate, protein and fat metabolism characterized in the fully expressed clinical state by an absolute or relative insulin deficiency, fasting hyperglycemia, glycosuria and tendency to develop vascular complications.

➢ Gestational diabetes occurs in approximately 4% of pregnancies. It usually develops during the third trimester and significantly increases perinatal morbidity and mortality. The proper diagnosis and management of gestational diabetes improves pregnancy outcomes. As with type II diabetes, the path physiology of gestational diabetes is associated with increased insulin resistance. Most patients with gestational diabetes return to a normoglycemic state after parturition; however, about 30 to 50% of women with a history of gestational diabetes will develop type 2 diabetes within 10 years.

Diabetes mellitus consists of 3 types (NDDG Classification)

1. Type I- insulin dependent mellitus.
2. Type II- Non-insulin dependent diabetes.
3. Gestational diabetes mellitus.

The country has already achieved the "dubious distinction" of being called the diabetes capital of the world with well over 33 million people suffering from it. According to who figures over 170 million people are diabetic all over the world. It could well be about 370 million in another 20-25 years.

Gestational diabetes mellitus [GDM] is defined as any degree of glucose intolerance with onset or first recognition during pregnancy. The definition applies weather insulin or only diet modification is used for treatment is whether or not the condition persist after pregnancy.

Approximately 7% of all pregnancy are complicated by gestational diabetes; resulting in more than 200000 annually. The prevalence may range from 1 to 14% of all pregnancies depending on the population studied and the diagnostic tests employed.

Diabetes in pregnancy is of 2 types:

1. Gestational
2. Pre gestational

Gestational diabetic generally occurs in the latter half of pregnancy (3rd Trimester) and symptomatic. It disappears after delivery as the hormonal levels revert back to normal. If it fails to disappear it suggests that there may be overt diabetes which may have antedated or begun concomitantly with the pregnancy.

➢ Pregnancy in a diabetogenic state is due to impaired insulin sensitivity. It worsens diabetes and some women may experience symptoms similar to those seen with type diabetes while poorly controlled diabetes result in fetal, antenatal, maternal complications, such as hypoglycemia, hypertrophic cardiomyopathy, pre-eclempsia, preterm etc.

➢ Diabetes mellitus is a common medical disorder encountered in pregnancy in certain population such as Asians particularly Indians, the prevalence of diabetes is high. Obesity and advanced maternal age other risk factors for diabetes.

➢ Gestational diabetes mellitus can harm the mother and fetus, early treatment is crucial. The aims of diabetic control in pregnancy are to maintain normal blood sugar level. The treatment includes early detection, screening, diet and exercise, medication therapy. Improving self care activities and also prevention of complications.

Indian data on GDM is scant and does not give the actual picture. India falls under moderately high risk group and with the advent of western life style, incidence of type 2 DM is raising precipitously.

In spite of plenty of research papers over the years, still lot of controversies remain, regarding type of screening, universal or selective, which diagnostic test to follow

and ideal cut off levels. This study is done to find out the prevalence of GDM in our hospital, to find out a one step procedure, which serves both as screening as well as a diagnostic tool for GDM.

METHODS:

MGM institute of health sciences, Navi Mumbai between November 2012 and November 2014. 100 pregnant women attending the antenatal clinic at the MGM institute The study was conducted in the department of obstetrics and gynaecology at of health sciences between 24-32 weeks of pregnancy irrespective of maternal age and gravidity and presence or absence of clinical or historic risk factors for GDM are considered for inclusion in the study

RESULTS:

In 100 women taken for study the incidence of GDM was 11%. The accuracy, positive predictive value, sensitivity and specificity of the 75g OGTT was higher than 50g GCT.

DISCUSSION:

The concept of Gestational Diabetes goes back at least to 1946. The importance of Gestational diabetes mellitus is that two generations, the women herself as are the children are at risk of developing diabetes in the future.

Increasing maternal carbohydrate intolerance in pregnant women is associated with graded increase in adverse maternal and foetal outcomes.

Ethnically Indian women have high prevalence of diabetes.

Indian women especially have eleven fold increases in developing gestational diabetes compared to Caucasian women.

Identification and systematic management of the disease reduces
both maternal and perinatal morbidity.

Hence universal screening during pregnancy has become important in our country.

For this we need a simple procedure which is economical and feasible.

Despite more than 30 years of research there is no consensus

Regarding the optimal approach to the screening for gestational diabetes.

Hence, a prospective study of 400 pregnant women between 27-31 weeks of
Gestation was done to find out a one step procedure which serves both as a screening and a diagnostic tool at the same time and which is acceptable, economical and feasible to perform in the Indian context.

CONCLUSION:

On analysis of all the parameters the sensitivity of 50g GCT was found to be significantly less compared to 75g OGTT in detecting GDM. In the Indian context with higher prevalence of GDM and where universal screening is mandatory, it is feasible and conductive to opt for 75g OGTT. The 2 step procedure of screening with 50g GCT and then diagnosing GDM based on the cut off values with 100g or 75 g is not practical as the pregnant women have to visit the clinic twice and the number of blood samples drawn vary from 3-5 which the women resent. Hence for universal screening a single GCT with 75g oral glucose and diagnosing women with >140mg% as GDM is recommended.

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