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EDITORIAL

Universal Screening for Gestational Diabetes Mellitus (GDM): Mandatory

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India today is being recognized as the diabetic capital of the world. Gestational diabetes mellitus (GDM) is defined as carbohydrate intolerance of variable severity with onset or first diagnosed during pregnancy [1]. It is a serious medical complication of pregnancy, which affects 1.1–14.3 % of pregnant women depending on the ethnic and clinical characteristics of the population and the diagnostic test employed [2]. The increasing incidence of GDM is because of, apart from other risk factors, rise in maternal age and maternal body mass index. Prevalence rates are found to be higher in black Hispanic, native American and Asian women compared to white women. In India, 79 million people are expected to have diabetes mellitus by the year 2030 (1). The prevalence of GDM in India varies from 9.9 % in rural population to 17.8 % in urban areas (2) [3]. The National Family Health Survey (NFHS) III—2005–2006 of India reported an increasing prevalence, 14.8 %, of overweight women aged 15–49 years (ranging from 28.9 % in urban areas to 8.6 % in rural areas) compared to 10.6 % in 1998–99 (3). [4] GDM has adverse outcomes of pregnancy including pre-eclampsia, caesarean section rates (which varied from 30 to 40 %), perinatal mortality (2-fold increased), birth defects, macrosomia (3-fold increased), shoulder dystocia, metabolic complications in neonates and morbidity associated with subsequent childhood obesity. Furthermore, the recurrence risk with future pregnancies has been reported as high as 68 % [4], and 26 % [5] risk of developing type two diabetes at 15 years of follow up. Therefore, the diagnosis of GDM offers a unique opportunity in identifying individuals who will be benefited by early therapeutic intervention with diet and exercise, thus normalizing the weight to delay or even possibly prevent the onset of diabetes. In 2005, Crowther et al. [6] reported in their randomized controlled trial that treatment of GDM reduced serious perinatal morbidity (combined endpoint of death, shoulder dystocia, bone fracture and nerve palsy) and the incidence of large-for-gestational-age infants. In 2009, Landon et al. [7] reported that treatment of women with mild GDM showed significant reduction in large-for-gestational-age infants, shoulder dystocia, caesarean section, preeclampsia or gestational hypertension and less maternal weight gain. Therefore, due to its high incidence, major impact on pregnancy outcome and therapeutic approaches, a universal, instead of a selective, screening has been recommended.

Screening for Gestational Diabetes Mellitus (GDM)

The diagnosis of GDM is biochemical. In 1964, O'Sullivan and Mohan [8] published their criteria for diagnosis of GDM by means of the 100 g Oral Glucose Tolerance Test (OGTT). Since then, clinicians across the world have been

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struggling to determine whether screening for GDM should be universal in pregnancy and if so, the optimal method of screening. The reason for universal screening for GDM is to try and reduce the number of pregnant women undergoing an OGTT. An universal screening protocol requires the consideration of patient comfort, cost to the laboratory and the risk of missing the diagnosis. The Australian Diabetes in Pregnancy Society (ADIPS) [9] recommends screening for GDM with 50 or 75 g oral glucose (GCT), irrespective of meal intake, with 1 h plasma glucose level $\geq$7.8 (140 mg/dL) or $\geq$8.0 mmol/L (144 mg/dL), respectively, indicating positive test requiring OGTT for diagnosis. In 2008, Holt [10] had suggested that fasting plasma glucose (FPG) can be used as a screening test. In North America, screening was done with 1 h 50 g GCT at 24–28 weeks of gestation with cut off value of 7.8 mmol/L (140 mg/dL) and 14–18 % were reported as test positive, and were subjected to either 75 g or 100 g OGTT as diagnostic test gave the sensitivity and specificity of 80 % and 90 %, respectively, whilst the positive and negative predictive values varied according to the prevalence of GDM in the population tested [11]. With this strategy of universal screening, about 20 % of women with GDM will remain undiagnosed; hence, in many parts of Europe, a risk factor approach to GDM is still practised. In this, woman's age, ethnicity and BMI are considered. Selective screening in risk factor may miss some cases of GDM in the lower risk category, but more cases may be diagnosed in the higher risk category. Hence, there is wide gap between screening practices in European countries and North America. However, in countries like Saudi Arabia, Nigeria and China, 1 h 50 g GCT at 24–28 weeks of gestation is considered as a reliable universal screening test for GDM. Recently, the International Association of Diabetes and Pregnancy Study Group (IADPSG) [12] has published new diagnostic recommendations for GDM using one-step OGTT after careful consideration of the data from the Hyperglycemia and Adverse Pregnancy Outcomes (HAPO) Study [13]. The IADPSG values are one or more of FPG $\geq$5.1 mmol /L(92 mg/dL), 1-h plasma glucose $\geq$10.0 mmol/L(180 mg/dL) and 2-h plasma glucose $\geq$8.5 mmol/L (153 mg/dL) following a 75 g OGTT [12]. However, in 2011, Huynh et al. [14] reported that using IADPSG criteria 19 % women were diagnosed with GDM; screening GCT had a sensitivity of 83 %, specificity of 75 % and would miss 17 % of cases. Hence, they concluded that OGTT alone is the best procedure without prior GCT. The American Diabetes Association [15] recommends that women with high risk for GDM should undergo testing as early in pregnancy as possible. All pregnant women should be screened for GDM between 24 and 28 weeks of gestation including those high risk patients who tested negative in early pregnancy.

On 14th March 2007, a Government of India Order [3] issued the instructions that universal screening of glucose intolerance during pregnancy should be mandatory. The order recommends that all women should be screened between 24 and 28 weeks of gestation with 2 h 75 g oral glucose. A venous blood glucose level of 140 mg % or more is suggestive of GDM. Every women attending the antenatal clinic is to be given 75 g of glucose mixed with a glass of water orally, irrespective of whether she has taken her breakfast or not. Women with positive tests are advised meal plans without compromising on the nutrition of mothers. More than 90 % women with GDM could be managed by meal plan alone. Thus, taking care of women with GDM is the first step in primary prevention of diabetes.

Conclusion

In today's scenario, the most appropriate strategies for screening and diagnosing gestational diabetes mellitus remain controversial. All of us must follow the GOI order of universal screening at 24–28 weeks of pregnancy with 2 h 75 g oral glucose tolerance test, or post lunch blood sugar level in the afternoon antenatal clinic in rural areas could be another easy intervention for taking care of the women with GDM as the first step in the primary prevention of diabetes. The timely action taken in screening all pregnant women for glucose intolerance, achieving euglycemia and ensuring adequate nutrition may prevent, in all probabilities, the vicious cycle of transmitting glucose intolerance from one generation to another. Hence, universal screening, instead of selective screening, for GDM is ideal for our population.

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