



available at www.sciencedirect.com



www.elsevier.com/locate/ijgo



CLINICAL ARTICLE

Abnormal results on a second testing and risk of gestational diabetes in women with normal baseline glucose levels

Dittakarn Boriboonhirunsarn*, Prasert Sunsaneevithayakul

Department of Obstetrics and Gynecology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

Received 26 June 2007; received in revised form 10 August 2007; accepted 13 August 2007

KEYWORDS

Gestational diabetes mellitus;
Screening tests

Abstract

Objective: To examine the rate of women with normal initial results to glucose tolerance tests who have abnormal results to subsequent testing, and estimate the risk of gestational diabetes mellitus (GDM) in these women. **Methods:** Baseline plasma glucose levels were classified as normal if they were less than 120 mg/dL (group 1) or between 120 and 139 mg/dL (group 2) by the 50-g glucose challenge test (GCT); as abnormal if they were found abnormal by the 50-g GCT but normal by the 100-g glucose tolerance test (OGTT) (group 3); and as abnormal if 1 of the four 100-g OGTT values was abnormal (group 4). A second testing session with the 50-g GCT and 100-g OGTT was performed between the 24th and 28th weeks of pregnancy for 900 women at risk whose initial test results were normal. **Results:** Of the 823 women with normal baseline results who completed the study, 41.4% had abnormal results to the second 50-g GCT, and gestational diabetes mellitus was diagnosed by the 100-g OGTT in 7.0% of these 823 women. Compared with group 1, the women in groups 2, 3, and 4 were at a significantly increased risk of having an abnormal result to the second 50-g GCT. They were also at a significantly increased risk for GDM. The adjusted odds ratios (ORs) were 3.0 for group 2 (95% confidence interval [CI], 1.2–7.2), 4.9 for group 3 (95% CI, 2.2–11.0), and 11.3 for group 4 (95% CI, 3.9–32.6). **Conclusion:** The risk of developing GDM significantly increased with increasing baseline plasma glucose levels by the 50-g GCT. © 2007 International Federation of Gynecology and Obstetrics. Published by Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Gestational diabetes mellitus (GDM) is defined as glucose intolerance with onset or first recognition during pregnancy [1–4]. The definition applies whether insulin or diet modification is used for treatment, and whether the condition persists after pregnancy. It does not exclude the possibility that glucose intolerance may have existed

* Corresponding author. Department of Obstetrics and Gynecology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand. Tel.: +66 2 419 7000x4637; fax: +66 2 418 2662.
E-mail address: sidbr@mahidol.ac.th (D. Boriboonhirunsarn).

unrecognized before pregnancy or may have developed irrespective of it.

Screening for GDM is controversial. Recommendations vary widely on whether and how to screen, on the optimal approach to screening, on reaching a diagnosis, and on the benefits of treating. And although various screening programs have been proposed and used to detect GDM [2–5], there is no consensus on the most appropriate screening and diagnostic scheme. The US Preventive Services Task Force concluded that the evidence was insufficient to recommend for or against routine screening for GDM; and that until such evidence is available, clinicians may reasonably choose either not to screen at all or to screen only women at increased risk for GDM [5].

A risk factor-based screening method was developed at our institution and implemented in 2000 for the screening, diagnosis, and management of GDM [6]. According to the resulting clinical practice guideline used at this institution, clinical risks for GDM are identified in all pregnant women during their first visit to the antenatal clinic. A 2-step approach is used, consisting of a 50-g glucose challenge test (GCT) as a screening test and a 100-g oral glucose tolerance test (OGTT) as a confirmatory test for GDM diagnosis. Pregnant women at risk are administered these initial tests, and a second testing is carried out between the 24th and 28th weeks of pregnancy even when the initial results are normal.

Noncompliance to the guideline has occurred, however, especially regarding the second testing of women with normal baseline results, perhaps because of the negligence of obstetricians or the women themselves, or because the women were lost to follow-up. Consequently, GDM may have developed later in pregnancy in women who were never diagnosed, perhaps with adverse pregnancy outcomes.

The 2 objectives of this study were to determine the rate of women with normal baseline test results and abnormal results on a second testing at this institution, and their risk for developing GDM. In addition, risk factors associated with both study outcomes were evaluated. The results should provide a better understanding of GDM screening in the diagnostic process and should also emphasize the importance of performing a second screening with diagnostic tests in pregnant women at risk for GDM.

2. Materials and methods

The study was conducted at the Obstetrics and Gynecology Department of Siriraj Hospital, a teaching hospital of Mahidol University Faculty of Medicine, Bangkok, Thailand. According to the institutional practice guideline, clinical risk factors for GDM are the following: a family history of diabetes, being 30 years or older, a history of hypertension, obesity (prepregnancy body mass index [calculated as weight in kilograms divided by the square of height in meters] > 27), and the following in a previous pregnancy: GDM, fetal macrosomia (birth weight ≥ 4000 g), congenital fetal anomaly, or unexplained intrauterine death [6].

A 2-step approach was used to screen and diagnose GDM. In brief, all pregnant women at risk were screened using the 50-g GCT, and the 100-g OGTT was used to confirm the diagnosis in women with abnormal results to the 50-g GCT (plasma glucose level ≥ 140 mg/dL). The cutoff values were adopted from the recommendation of the National Diabetes Data Group (NDDG) [7]. A diagnosis of GDM was made when any 2 of the 4 baseline

plasma glucose values met or exceeded 105, 190, 165, and 145 mg/dL at 0 (fasting value), 1, 2, and 3 h, respectively, by the OGTT. When the diagnosis of GDM was made, the women were counseled and treated according to the treatment guideline.

A total of 900 pregnant women who were clinically at risk for GDM but who had normal test results by both the 50-g GCT and the 100-g OGTT before the 20th week of pregnancy were recruited. Of these women, 823 underwent a second screening between the 24th and the 28th week of pregnancy. The main outcomes of interest were the incidence of abnormal results with the 50-g GCT between the 24th and the 28th weeks of pregnancy and the incidence of GDM diagnosed on the basis of the OGTT results on this second testing.

Baseline characteristics, clinical risk factors, and results to the initial screening and diagnostic tests were extracted from the antenatal records. Pregnant women were then classified into 4 groups according to their initial test results. Plasma glucose levels were classified as normal if they were less than 120 mg/dL (group 1) or between 120 and 139 mg/dL (group 2) by the 50-g GCT; abnormal if they were found abnormal by the 50-g GCT but normal by the 100-g OGTT (group 3); and abnormal if 1 of the four 100-g OGTT values were abnormal (fasting value and values at 1, 2, and 3 h) (group 4).

Mean ± SD and number and percentage were used to describe the pregnant women's characteristics. The rate of second 50-g GCTs with abnormal results and the risk that pregnant women with normal values on first testing would develop GDM were calculated with their 95% confidence intervals (CIs). The possibility of an association between baseline test results and clinical risk factors was evaluated for both outcomes. The χ^2 test was used for comparisons between groups. Relative risks (RRs) and 95% CIs were calculated. Logistic regression analysis was used to determine the independent risk factors associated with

Table 1 Baseline characteristics of 823 pregnant women at risk for GDM

Characteristic	Value
Maternal age, years	30.5 ± 5.7
Pregnancy duration at first screening, weeks	12.3 ± 4.3
Pregnancy duration at second screening, weeks	25.9 ± 1.7
Parity	
0	324 (39.4)
1	359 (43.6)
≥ 2	140 (17.0)
Risk factor for GDM	
Family history of DM	334 (40.6)
Maternal age ≥ 30 years	567 (68.9)
History of fetal macrosomia	18 (2.2)
History of congenital fetal anomaly	11 (1.3)
History of unexplained IUFD	8 (1.0)
History of hypertension	13 (1.6)
History of GDM	7 (0.8)
Obesity	80 (9.7)
No. of risks	
1	641 (77.9)
2	153 (18.6)
≥ 3	29 (3.5)

Abbreviations: DM, diabetes mellitus; GDM gestational diabetes mellitus; IUFD, in-utero fetal demise.
Values are given as mean ± SD or number (percentage).

Download English Version:

<https://daneshyari.com/en/article/3952835>

Download Persian Version:

<https://daneshyari.com/article/3952835>

[Daneshyari.com](https://daneshyari.com)