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Cut-off value of 1-h, 50-g glucose challenge test for screening of gestational diabetes mellitus in an Iranian population

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Abstract

Aim: This study aimed to investigate the cut-off value of the glucose challenge test in an Iranian population.

Materials and Methods: A total of 1804 consecutive native Iranian women who underwent a glucose challenge test were prospectively investigated. The test was performed between 24 and 28 weeks of gestation; each subject received a 50-g oral glucose load regardless of her fasting or fed state; the 1-h venous plasma glucose level was then determined. Women exceeding 130 mg/dl received the diagnostic 100-g, 3-h oral glucose tolerance test to determine whether or not they had gestational diabetes mellitus.

Results: The prevalence of the glucose challenge test for the whole cohort was 7.2%. The receiver–operator characteristic curve identified a glucose challenge test finding above 135 mg/dl as the cut-off value for detecting gestational diabetes mellitus, which showed a sensitivity and specificity of 95% and 80%, respectively.

Conclusion: Our results suggest that the cut-off value of a 50-g glucose challenge test is 135 mg/dl to identify pregnancies with gestational diabetes mellitus in an Iranian population.

Key words: gestational diabetes mellitus, glucose challenge test, Iran, screening test.

Introduction

Gestational diabetes mellitus (GDM) is defined as 'carbohydrate intolerance of varying severity with onset or first recognition during pregnancy'.[1] This definition includes women with both mild and severe hyperglycemia, resulting in prevalence varying from 7% to 14%, depending on the population studied and the diagnostic tests employed.[2,3] The highest prevalence was in Asians, followed by Latinas, African Americans, and finally whites.[4] The identification of GDM is important for the prevention of such perinatal complications as maternal hypertensive disorders and a large-for-gestational-age neonate.[5] Since 1973, when the 1-h 50-g glucose challenge test (GCT) was first reported,[6] this screening test for gestational diabetes has become incorporated into most practitioners' routine prenatal care. Over the past 3 decades, there has been disagreement regarding the optimal screening threshold of the GCT to both maximize sensitivity and keep specificity within an acceptable range. In their initial study, O'Sullivan *et al.* proposed 130 mg/dL when testing whole blood (143 mg/dL when using venous plasma). However, Carpenter and Coustan[7] subsequently recommended 135 mg/dL. More recently the Fifth International Workshop-Conference on GDM proposed an assessment of the clinical characteristics of all pregnant women to determine the risk of GDM as well as serum glucose testing.[8] According to the screening strategy, universal screening using the 50-g, 1-h oral GCT is

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