

Screening for gestational diabetes mellitus in pregnant females

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ABSTRACT

Objectives: To evaluate the applicability of the 50-g glucose challenge test as a screening test for gestational diabetes mellitus in relation to pregnancy outcomes.

Methods: A prospective study was conducted on 818 Saudi pregnant females who were randomly recruited from the Antenatal Clinics at King Abdulaziz University Hospital and New Jeddah Clinic Hospital, Jeddah. All females underwent a 50-g glucose challenge test between 24-28 weeks gestation. A result for 50-g glucose challenge test was considered positive at > 7.2 mmol/L and the female was asked to undergo a 100-g oral glucose tolerance test. The diagnosis of gestational diabetes mellitus was carried out according to the National Diabetes Data Group criteria.

Results: A total of 289 females exhibited plasma glucose level > 7.2 mmol/L following the 50-g glucose challenge test. Of the 289 females enrolled for the 100-g oral glucose tolerance test, 102 were diagnosed to have gestational diabetes mellitus (positive oral glucose tolerance test) and 187 were considered oral glucose tolerance test negative according to the National Diabetes Data Group diagnostic criteria. This gave a prevalence of gestational diabetes mellitus of 12.5%. Gestational diabetes mellitus females were significantly older in age, heavier in weight, with higher gravidity, greater percentage of operative deliveries and still-births, and heavier fetal birth weight as compared with the non-gestational diabetes mellitus group ($P < 0.05$ in each case). The maximum sensitivity and specificity of the 50-g glucose challenge test were found to be at plasma glucose value of 7.8 mmol/L post the 50g glucose load. The sensitivity and specificity of this value was 88% and 84%, with a positive predictive value of 82%. To determine whether the values of plasma glucose after a 50-g glucose load were detecting abnormalities similar to those detected according to that of oral glucose tolerance test; the values obtained one-hour post the 50-g glucose challenge test were compared with zero-, one-, 2- and 3-hour values and also the area under the curve in the 100-g oral glucose tolerance test. Plasma glucose post the 50-g glucose challenge test showed marked correlation with oral glucose tolerance test results. This was mostly occurring at the one- and 2-hour oral glucose tolerance test values and was stronger in the gestational diabetes mellitus group and in both the gestational diabetes mellitus plus negative oral glucose tolerance test combined, than in the negative oral glucose tolerance test group on its own.

Conclusions: It is concluded that plasma glucose level measured one-hour post a 50-g glucose challenge test at 24-28 weeks of gestation with a cut-off value of 7.8 mmol/L is a reliable screening test for gestational diabetes mellitus in the local population studied. This test offers the best combination of ease and economy of use and reproducibility in screening for gestational diabetes mellitus.

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