Disorders of glucose challenge test (GCT) in pregnant women referred to Khatam-o-allanbia laboratory of Arak city, Iran

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Gestational diabetes mellitus (GDM) is the most common metabolic disorder during pregnancy which is associated with 3 to 4 folds of increase in the risk of maternal and fetal morbidity, if it is not diagnosed early (1). Gestational diabetes occurs from 1% to 14%, and 90% of pregnancy-related diabetes has been related to gestational diabetes (2). Glucose challenge test (GCT) and glucose tolerance test (GTT) are recommended by American Diabetes Association (ADA) for screening and diagnosing of gestational diabetes (3).

In this cross-sectional study, the subjects were the pregnant women during 24-28 weeks of gestation referred to Khatam-o-allanbia laboratory of Arak city in 2009. First, we explained the aim of the project and then obtained the written consent. After being fast for at least 8-12 hours, five ml of their venous blood was drown. For GCT, the blood samples were obtained one hour after consumption of 50g of glucose powder. The Individuals whose GCT was equal or higher than 130 mg/dl were introduced for GTT in the future days.

After 8-12 hours of being fast, blood samples were taken to perform GTT. Then after eating 100 grams of glucose powder, their 1, 2 and 3 hour -venous blood samples were drown to perform glucose test, using glucose testing kit of Pars Azmun Company and Mindary BS-300 autoanalyser.

The average age of referred pregnant women is 27.37±10.24 year. Of 417, 403 (96.64%) have normal fasting plasma glucose (≤ 99 mg/dl) and 14 (3.36%) have abnormal fasting plasma glucose (≥ 100 mg/dl). When normal GCT is considered ≥140 mg/dl and ≥130 mg/dl, 357 (85.61%) and 308 (73.56%) have normal GCT and 60 (14.39%) and 109 (26.14%) have abnormal GCT, respectively. The Average of fasting plasma glucose (FPG) and GCT are 83.86 (73-243) and 118.32 (140-351) mg/dl, respectively. In 9 (64.29%) of women with abnormal FPG, the GCT test is also abnormal.

By performing GTT for the women whose GCT was equal or higher than 130 mg/dl, 24 (5.76%) were identified with gestational diabetes and introduced for treatment. If 140 mg/dl was considered as a cutoff point of GCT, four women (0.94%) would falsely be non-diabetic. Based on this study, the prevalence of GDM is 5.74% that is not so high, compared to the range of 4.8 to 7.4% of the country (4). A study conducted by Soheilykhah et al. on 1071 pregnant women with GCT of ≥ 130 mg /dl, 31.9% of the women had abnormal GCT. After doing GTT, 110 patients (10.2%) have been diagnosed with gestational diabetes (2) that is higher than the prevalence of other studies in Iran.

Due to results of this study and other studies, it seems that the GCT is not a reliable test for screening gestational diabetes. On the other hand, if GCT is going to be used, further studies are required to review the current Cutoff point of this test.

Key words: Glucose challenge test (GCT), Fasting plasma glucose (FPG), Gestational diabetes.