CAN FASTING AND POST PRANDIAL PLASMA GLUCOSE SCREENING REPLACE GESTATIONAL DIABETES MELLITUS SCREENING IN WOMEN WHO REFUSE GLUCOSE LOAD?

HATICE KANSU-CELIK, A.SEVAL OZGU-ERDINC, BURCU KISA KARAKAYA, YASEMIN TASCI, SALIM ERKAYA

ZEKAI TAHIR BURAK WOMEN'S HEALTH, EDUCATION AND RESEARCH HOSPITAL, ANKARA, TURKEY

INTRODUCTION

- GDM = impaired glucose tolerance first recognized during second or third trimester of pregnancy
- The prevalence of GDM is high as 9.2%, according to a 2014 analysis by the CDC
- Risk factors advanced maternal age (>25), multiparity, multiple pregnancy, family history of diabetes, pregnancy losses at second or third trimester, history of giving birth macrosomia fetus, GDM history in previous pregnancy, and overweight and obesity
- Pregnancies with complicated GDM are faced with abortion, large for gestational age, intrauterine growth restriction, polyhydramnios, intrauterine fetal death, preeclampsia, and delivery complications including cesarean section, birth trauma, neonatal hypoglycemia, hyperbilirubinemia, polycythemia, and needing for NICU
- Therefore, early diagnosis and treatment of GDM may reduce fetal exposure to maternal hyperglycemia and decrease complications of maternal and fetal

AIM

- Screening for GDM recommended as single or two-stage oral glucose tolerance test (OGTT) between 24 and 28 weeks of pregnancy.
- Recently, a diet like paleo has been very popular and a tendency is observed in some Turkish pregnant women against to consume beverages with sugar even if for screening.
- In this study, we aimed to determine the prevalence of pregnant women who refused to attend gestational diabetes screening test and compared their maternal and fetal outcomes with those who accepted gestational diabetes screening test.

MATERIAL-METHODS

- Women who refused to attend gestational diabetes screening test among pregnant women admitted at our hospital for routine follow-up at 24-28 gestational ages from October 2014 to January 2015 were included in the study.
- Women who refused to attend gestational diabetes screening test were followed as fasting and postprandial 2nd hour plasma glucose levels at screening time and 32 weeks of gestational age. Abnormal glucose test was defined as fasting glucose level >92 mg/dl and, or postprandial 2th hour glucose level>120 mg/dl.
- Control group was recruited from age-parity and BMI matched women who have accepted gestational diabetes screening test. Women in control group underwent two stage GCT.
- Patients with abnormal plasma glucose level (FPG>92 mg/dl and or PPG>120 mg/dl) or positive OGTT were followed by a qualified dietitian and initially received an 1800–2200 calorie diet. Treatment targets to maintain maternal capillary glucose concentration at <92 mg/dl in the fasting state, and <120 mg/dl 2 hours after starting the meal. If levels were still above mentioned the objectives despite repeated FPG and PPG measurements, the patient was treated by insulin if necessary.

RESULTS

- Among the 1388 pregnant women, 162 women (12%) who had refused to attend screening test and 1226 women (82%) had accepted gestational diabetes screening test. Control group was recruited 194 age parity matched women who had accepted gestational diabetes screening test.
- Compared with control group, women who did not attend gestational diabetes screening test were at higher risk for idiopathic polyhydramnios p value was =0.026.
- There were no statistically significant differences for other obstetric and neonatal outcomes between the groups.
- When two groups were reanalyzed according to gestational diabetes diagnosis; the maternal and fetal outcomes were similar in both groups of those with and without diabetes diagnosis.

Table 1. Demographics and Medical History			
Variable, n (%)	Women who rejected screening	Control groups	P
	(n=162)	(n=194)	
Age (y)	27.65 (17-43)	27.77 (17-42)	0.914
Multiparous	99 (61)	127(65)	
Maternal BMI	27.62 (18-40)	26.91 (18-38)	0.072
Gestational age(wk)	25.99(24-28)	25.87 (24-28)	0.207
Lower socio-economic level	138(85)	170(87)	0.834
Education level			0.956
1	126(78.1%)	152 (78.3)	
2	36 (21.9)	42 (21.7%)	
History of GDM	3(1.9)	8(4.1)	0.282
Positive family history	17(10.5)	29(14.9)	0.125
History of macrosomic delivery	8(4.9)	7(3.6)	0.575

Table 2. Obstetrics outcomes			
Variable, n (%)	Women who rejected screening N=162	Control groups N=194	P
Gestational age at delivery (wk)*	38.78 (24-42)	38.83 (29-42)	0.846
Maternal weight gain (kg) *	11.15 (5-18)	12.5 (3-30)	0.628
Delivery by Ceseraen-section	72(44.4)	90(46.4)	0.822
Preterm delivery (<37 wk)	14(8.6)	17(8.8)	0.968
Macrosomia (birthweight >4000 g)	10(6.2)	8(4.1)	0.970
Preeclampsia	6(3.7)	4(2.1)	0.522
Polyhydramnios	7(3.7)	1(0.5)	**0.026**
Olygohydramnios	6(3.7)	5(2.6)	0.556
SGA (<10th percentile)	19(11.7)	23(11.9)	0.970

Table 3. Neonatal characteristics.			
	Women who rejected screening (n=162)	Control groups (n=194)	P
Birthweight (g)*	3232 (751-5150)	3211(1000- 4700)	0.876
Apgar*			
1th min	7(4-8)	7(4-8)	0.956
5th min	9(6-10)	9(6-10)	0.956
NICU (n,%)	9(5.6)	7(3.6)	0.446

*** Median (Min.-Max), NICU: Requirement of neonatal intensive care unit.**

DISCUSSION / FPG

- FPG superior PPGL for screening
- HAPO study FPG> 95 mg/dl = corralated fetal macrosomia, 24-28 week
- A review, FPG criteria ADA (75 g OGTT or 100 g OGTT) useful, but WHO criteria FPG>109 mg/dl poor specificity and high false positive rate (our study impared glucose met. found 31%, but GDM 9%)

Agarwal MM. Fasting plasma glucose as a screening test for gestational diabetes mellitus. Arch Gynecol Obstet. 2007

- FPG> 88 mg/dl is a better GCT or PPGL

Tam WH. **Which screening test is the best for gestational impaired glucose tolerance and gestational diabetes mellitus.** Diabetes Care. 2000

- Our study, FPG>92 mg/dl and /or PPGL>120 mg/dl, missed out macrosomia 40% and polyhydramnios 28%

POLYHYDRAMNIOS

- Excess volüme of amniotic volüme, prevelance 1-2%
- Maternal diabetes, fetal infections, fetal structural abnormalities, idiopathic, multiple pregnancy
- Our study, all cases third trimester and mild, 5/7 cases high level of plasma glucose
- TORCH negative and ultrasound normal in second trimester

CONCLUSION

As GDM is linked to many serious fetal and maternal complications; screening, diagnosis, treatment, and follow-up of GDM is recommended for all pregnant women.

Though pregnant women who were screened by FPG and PPPG in the second trimester, 40% of fetal macrosomia and 28.6% polyhydramnios were missed out other adverse perinatal and neonatal outcomes were not increased therefore fasting and post prandial plasma glucose screening can replace gestational diabetes mellitus screening in women who refuse glucose load.

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