Compliance with blood glucose testing and gestational weight gain in patients with gestational diabetes: A secondary analysis

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Abstract

Excessive gestational weight gain (GWG) and obesity are related to increased morbidity. We aimed to compare adverse birth outcomes in obese vs. non-obese women with gestational DM (GDM) and GWG adherence with Institute of drugs (IOM) recommendations in women compliant vs. non-compliant with blood glucose (BG) testing. We conducted a secondary analysis of a randomized controlled trial at five tertiary medical centers from 5/2013-5/2016 evaluating the frequency of BG testing (everyday vs. every other day) among women with GDM. Abnormal BG values included fasting ≥95mg/dl or 2-hr postprandial ≥120mg/dl. Women's weights were categorized based on the international BMI classification. Compliance with BG testing was defined as 90% of expected BG values. GWG was assessed for adherence to IOM recommendations. Primary maternal outcomes included primary cesarean section, labor dystocia, shoulder dystocia, and delivery due to uncontrolled diabetes. Primary neonatal outcomes included NICU admission, neonatal hypoglycemia, macrosomia, hyperbilirubinemia or respiratory distress syndrome. Composite outcomes were evaluated. Fisher exact or Chi-square tests were used as appropriate. Two hundred and eighty-seven women were included during this analysis. Maternal and neonatal adverse outcomes didn't differ between BG testing groups when stratified by non-obese vs. obese. Pooled BG testing groups demonstrated macrosomia (p=0.0157) and the neonatal outcome composite (p=0.0042) were significantly more common in obese vs. non-obese women. When stratified by obesity class, maternal and neonatal outcomes did not differ between testing groups. GWG was more likely to be within IOM guidelines in compliant vs. noncompliant women (p=0.0283). Pooled BG testing groups stratified by obesity showed no difference in GWG between non-obese vs. obese women in the compliant vs. non-compliant groups. Our results support obesity as an additional risk factor for adverse pregnancy outcomes in women with GDM and suggest improved adherence with IOM GWG guidelines amongst compliant patients.

Gestational diabetes mellitus (GDM) is increasing in prevalence in tandem with the dramatic increase in the prevalence of overweight and obesity in women of childbearing age. Much controversy surrounds the diagnosis and management of gestational diabetes, emphasizing the importance and relevance of clarity and consensus. If newly proposed criteria are adopted universally a significantly growing number of women will be diagnosed as having GDM, implying new therapeutic challenges to avoid foetal and maternal complications related to the hyperglycemia of gestational diabetes. This review provides an overview of clinical issues related to GDM, including the challenges of screening and diagnosis, the pathophysiology behind GDM, the treatment and prevention of GDM and the long and short term consequences of gestational diabetes for both mother and offspring.

Gestational diabetes mellitus (GDM) occurs in about 5% of pregnancies but figures vary considerably depending upon the criteria used and demographic characteristics of the population. The prevalence is expected to increase as the epidemic of obesity continues. Pregnancies affected by GDM impose a risk for both mother and child as the risk of cesarean and operative vaginal delivery, macrosomia, shoulder dystocia, neonatal hypoglycemia and hyperbilirubinemia is increased. Women with a history of GDM are also at an increased risk of developing type 2 diabetes mellitus (T2DM) in the years following their pregnancy and their children have a higher risk of developing obesity and T2DM early in life. For those reasons it is important to pay rigorous attention to GDM and the purpose of this review is therefore to cover a wide range of clinical issues related to GDM, including the challenges of epidemiology, diagnostic criteria and screening, the pathophysiology of GDM, the treatment and prevention of GDM and the long and short term consequences of GDM for both mother and child. It is problematic to determine the true prevalence of GDM. The prevalence varies worldwide and even within a country's population, depending on the racial and ethical composition of the residents. Accordingly, in the United States the prevalence is higher amongst African American, Hispanic American, Native American, Pacific Islander, and South or East Asian women than in Caucasian women. Furthermore the prevalence of GDM differs depending on the variety of screening strategies (universal or selective), diagnostic criteria and the prevalence of T2DM in any specific country. While data from western countries are frequently reported, data from developing countries are sparse. Recently Jiwani et al and Macaulay et al tried to determine the prevalence of GDM worldwide, including developing countries. The prevalence was found to be ranging from < 5% in countries such as Pakistan, Belgium, Denmark, Estonia, Ireland, South Korea, South Africa and United Kingdom, to < 10% in Italy, Turkey, Brazil, United States, Morocco and Australia, to a prevalence as high as 20% in Bermuda and Nepal. A recent report from the International Diabetes Federation estimated that worldwide 16% of live births in 2013 were complicated by hyperglycemia during pregnancy and it is most likely that the prevalence of GDM will increase due to the increase in risk factors like obesity and physical inactivity

Biography

Jenani Jayakumaran has completed her graduation in Reproductive Biology at Johns Hopkins Bloomberg School of Public Health. Following her time in Baltimore, she moved to Philadelphia to attend Drexel University College of Medicine. She is currently a second year OB/GYN Resident at Rutgers-Robert Wood Johnson Medical School. She plans to pursue a Fellowship in Maternal Fetal Medicine. Her interests include preterm labor and gestational diabetes..

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