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PROFESSIONAL UPDATE: WOMEN'S HEALTH

Gestational diabetes management

A holistic approach

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Gestational diabetes mellitus (GDM) is on the rise worldwide and is now among the most common medical complications of pregnancy (Poomalar, 2015). According to the Centers for Disease Control and Prevention, the prevalence of GDM in pregnant women is estimated as high as 9 percent. Data suggest this rise is linked to the coinciding increase in obesity (DeSisto, Kim, & Sharma, 2014). In response, increased efforts in research and prevention are influencing today's clinical management of GDM in the primary care setting, including pre-pregnancy counseling, early screening strategies, therapeutic management, and long-term follow up postpartum.

What is GDM?

Gestational diabetes is defined as any degree of glucose (carbohydrate) intolerance, with onset or first recognition during pregnancy. The American Diabetes Association (ADA) suggests this definition encompasses insulin or diet-only modifications for treatment and whether the condition continues after pregnancy.

Among GDM risk factors are a body mass index (BMI) greater than 30, family or previous history of GDM, known impaired glucose metabolism, polycystic ovary syndrome, and previous infant birth weight over 9 pounds. Other factors associated with glucose abnormalities in pregnancy include excessive weight gain prior to pregnancy and excess saturated fat intake.

Significant health concerns

GDM is associated with neonatal and fetal complications. Women with GDM are at higher risk of gestational hypertension, preeclampsia, and cesarean delivery. Infant risks include macrosomia, neonatal hypoglycemia, hyperbilirubinemia, operative delivery, birth trauma, and respiratory distress syndrome.

The long-term impact of GDM is significant. The American College of Obstetricians and Gynecologists (ACOG) projects that upwards of 50 percent of women with GDM will develop type 2 diabetes at some point in their lives. Children of women with GDM are at greater risk for diabetes, glucose intolerance, and obesity (Metzger & Coustan, 1998).

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Early screening strategy, diagnosis

ACOG recommends all pregnant women who do not have preexisting diabetes be tested for GDM (see the sidebar). A two-step approach to testing is common in the U.S. The first step is performed by checking capillary or serum glucose one hour after ingesting 50 grams of carbohydrate. Depending on the results, a second diagnostic step includes a three-hour glucose test with ingestion of 100 grams of carbohydrate.

- Low-risk patients are screened at 24 to 28 weeks of gestation; if glucose levels meet or exceed screening thresholds greater than 135 or 140 mg/dL (based upon community prevalence rates of GDM), the patient undergoes diagnostic testing.
- High-risk women, those with a history of previous gestational diabetes, known impaired glucose metabolism, or obesity, are screened at 10 to 14 weeks. If glucose levels are normal, she will be rescreened with a one-hour glucose test at 24 to 28 weeks. If the glucose is high, the patient will complete an early three-hour glucose tolerance test (GTT). If she passes threshold parameters, she will be rescreened at 24 to 28 weeks.

Alternative protocols have been used and promoted by other organizations. The International Association of Diabetes and Pregnancy Study Groups (IADPSG) suggest a one-step approach. At the first prenatal visit, a hemoglobin A1c or a fasting plasma glucose (FPG) test is performed for all or only high-risk women to identify undiagnosed pregestational diabetes. Overt diabetes in pregnancy is indicated with an A1c >6.5 percent or FPG > 126 mg/dL. While the A1c may be a useful marker to help identify pregestational diabetes, ACOG continues to recommend the two-step approach due to lack of evidence that the one-step approach would lead to clinically significant improvements in maternal or newborn outcomes (Feldman, Tieu, & Yasumura, 2016).

Medical management during pregnancy

It is important to offer nutritional counseling as part of a multidisciplinary approach to medical management of gestational diabetes. Medical nutrition therapy, initiated within one week of diagnosis and with a minimum of three nutrition visits, results in decreased insulin use, improves likelihood of normal fetal and placental growth, and reduces risk of perinatal complications, especially when diagnosed and treated early. Registered dietitians and

certified diabetes educators help patients achieve normoglycemia, prevent ketosis, and gain appropriate pregnancy weight. Timely referrals allow women to quickly access resources and provide seamless continuity of care. At our practice, for example, women receive education on gestational diabetes that includes a carb-controlled meal plan, glucometer teaching, and exercise counseling. They also receive patient navigator services throughout their pregnancy to ensure glycemic control.

If a woman experiences persistently elevated glucose at any point of her pregnancy and/or excessive rate of fetal growth, she should be referred to a diabetes specialist for consideration of pharmacological therapy. Women requiring medication can also start weekly biophysical profiles at 32 weeks.

In the absence of a dietitian or certified diabetes educator, here are some useful recommendations from ACOG:

1. Practitioners should encourage patients to consume adequate calories to promote appropriate weight gain with guidance from the Dietary Reference Intakes (DRI) for pregnant women, as research indicates that inadequate weight gain during pregnancy is associated with an increased risk of preterm delivery, regardless of pre-pregnancy BMI levels. The USDA has created a useful app, "DRI Calculator for Healthcare Professionals." In obese women, the Academy of Nutrition and Dietetics Evidence Analysis Library recommends that 70 percent of the DRI calculated energy needs, or at least 1800 calories daily, will help slow weight, prevent ketonemia, and ketonuria. The general caloric needs of pregnant women increase by ~340 calories in the second trimester and another ~110 calories in the third trimester. For obese women, the addition of 150 calories in the second and third trimesters will help meet their pregnancy needs while supporting appropriate weight gain.
2. The DRI recommends that pregnant women consume a minimum of 175 g of carbohydrate daily to provide glucose for the fetal brain and to prevent ketosis. Carbohydrate intake affects post-meal blood glucose levels. Postprandial hyperglycemia is associated with increased incidence of large-for-gestational age infants and increased rate of cesarean deliveries. Studies show improved outcomes at carbohydrate

intake of less than 45 percent of total energy intake.

3. ACOG recommends that carbohydrates be distributed between three meals and two to three snacks to reduce postprandial glucose fluctuations. Due to pregnancy hormones, women with GDM often find it hardest to control their blood sugar in the morning. Clinicians can consider recommending a general pattern of 15 to 30 grams of carbohydrate at breakfast and snacks with 45 to 60 grams of carbohydrate at lunch and dinner.
4. Useful apps primary care providers can recommend to patients include: Diabetes App by BHI Technologies; Glucose Buddy by Azumio; Diabetes Tracker by MyNetDiary; or Diabetes in Pregnancy by Coheso. Food and glucose diaries, whether electronic or paper, have been shown to be more effective in controlling GDM when practitioners request and review them.

Clinicians should also consider recommending a moderate exercise program that consists of physical exercise for 30 minutes per day to improve glycemic control (Blumer et al., 2013). If women are prescribed insulin, they should check their blood glucose prior to exercise. The ADA (2016) recommends consuming carbohydrates before exercise if blood sugar levels are below 100 mg/dL.

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Considerations for delivery

According to ACOG, women with gestational diabetes with good glycemic control and no other complications can be managed expectantly. Women on medical therapy with good glycemic control do not require delivery before 39 weeks of gestation. Delivery at or after 37 weeks should be considered for women with poor glycemic control.

Macrosomia is more common in women with gestational diabetes, and shoulder dystocia is more likely at a given fetal weight in pregnancies complicated by diabetes. Ultrasound for estimated fetal weight (EFW) may be considered for those women in which macrosomia is expected. The accepted range of error in ultrasound EFW is 10 percent of the actual fetal weight, which limits its usefulness. It has been

estimated that up to 588 cesarean deliveries for an EFW of 4,500 gm and up to 962 cesarean deliveries for an EFW of 4,000 gm would be needed to prevent a single case of permanent brachial plexus palsy. It is reasonable to discuss the option of scheduled cesarean delivery when the EFW is 4,500 gm or more.

Medical management postpartum

At a patient's postpartum appointment at six to 12 weeks, it is recommended that all women with gestational diabetes complete a fasting glucose. They may also be tested with a 75 gm two-hour challenge test. If postpartum testing is normal, repeat testing is conducted at three-year intervals in concordance with ACOG and the ADA.

Clinician support of breastfeeding is also notable. Research has indicated that breastfeeding results in long-term improvements in glucose metabolism even after adjustment for maternal age, BMI, and use of insulin during pregnancy. Breastfeeding may also reduce the risk of type 2 diabetes in children (Academy of Nutrition and Dietetics Evidence Analysis Library, 2016).

Conclusion

With the increasing incidence of obesity and diabetes in pregnancy, health care providers are uniquely positioned to advocate for holistic approaches to improve patient health. The ADA recommends that clinicians consider three key themes for diabetes care including: patient-centeredness; diabetes across the life span; and advocacy. Recommending a comprehensive plan with a multi-disciplinary approach will reduce health risks including blood pressure and lipid control, smoking prevention and cessation, weight management, physical activity, and healthy lifestyle choices. Improving coordination between clinical teams will also help patients transition through different stages of their life span. The natural transition from gestational diabetes to postpartum prevention of type 2 diabetes is an opportune time to make long-lasting lifestyle improvements for women and their children. Advocacy at multiple levels of the health care system will help improve the societal determinants of obesity and diabetes that are at the root of these problems. ▣

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