Gestational Diabetes

Gestational diabetes mellitus (GDM) is a condition of new onset glucose intolerance caused by insulin resistance in a previously healthy woman, that occurs around 24 weeks gestation. GDM occurs in approximately six to seven percent of all pregnancies in the United States. GDM is usually asymptomatic in the mother but fetal complications include polyhydramnios and macrosomia. Diagnosis is typically made via screening during 24-28 weeks gestation. Patients are screened using a one hour glucose challenge test. If initial test results are abnormal, a three hour glucose challenge test is used to confirm the diagnosis. First line treatment is diet and exercise, along with strict glucose monitoring. Insulin is the gold standard in patients who fail dietary treatment. Periodic ultrasounds and nonstress tests are used to monitor fetal growth and well-being throughout the pregnancy. It may be necessary to induce labor at 39-40 weeks in certain circumstances.



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Signs and Symptoms

Usually Asymptomatic
Thumbs-up
Gestational diabetes is typically asymptomatic in the mother. For this reason, screening at 24-28 weeks gestation is extremely important.

Fetal Macrosomia
Big Baby with Macro-macaroni
Fetal macrosomia refers to excessive intrauterine growth beyond a certain threshold, usually defined as birth weight greater than 4500 grams (9 lbs 15 oz). As a comparison, term infants who are appropriate for gestational age have weights between 2500 and 4000 grams. Large for gestational age (LGA) is a similar term that is defined as birth weight greater than the 90th percentile for age. Gestational diabetes is a major cause of fetal macrosomia/ LGA. This is because excessive maternal glucose crosses the placenta causing fetal hyperglycemia. In response, the fetus produces more insulin. Insulin increases stored fat and muscle mass in the fetus. A common neonatal complication in these infants is hypoglycemia, as maternal glucose supply is suddenly withdrawn but circulating insulin remains high.

Polyhydramnios
Polly-fluid-in-womb
Polyhydramnios refers to excessive volume of amniotic fluid, and can be defined by obstetric physicians as an amniotic fluid index is greater than 25 cm. Women with gestational diabetes have a greater risk of developing polyhydramnios. Some complications of polyhydramnios include preterm labor, umbilical cord prolapse and fetal malpresentation.

Diagnosis

Glucose Intolerance After 24 Weeks Gestation
Glue-bottle Intolerance with (2) Tutu and (4) Fork
Routine screening for gestational diabetes mellitus (GDM) is performed between 24 and 28 weeks gestation. However, patients with certain risk factors for developing GDM may be screened earlier in pregnancy. These risk factors include age greater than 25, obesity, history of GDM, family history of diabetes mellitus, a prior macrosomic infant, or belonging to an ethnic group with an increased risk for the development of type 2 diabetes.

3-hr 100g Glucose Tolerance Test
(3) Tree and (100) Dollar-bill with Glue-bottle
If the one hour glucose challenge test is positive, a confirmatory test is administered. A 100 gram, three hour oral glucose tolerance test is performed after an overnight fast. To test positive for gestational diabetes, the patient must have abnormal glucose levels at two or more time points while the test is being administered.

Treatment

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Diet and Exercise

Nutritional-plate and Exercising on Treadmill

Diet is the first line therapy for gestational diabetes. The American Diabetes Association (ADA) recommends a diet low in carbohydrates (including fruits), more high-fiber vegetables, and moderate amounts of fat and protein from meat and dairy sources. Exercise within limits of pregnancy is also recommended. If diet and exercise control is insufficient, insulin is added.

Close Glucose Monitoring

Glue-bottle and Monitor

It is recommended that patients strictly monitor their glucose four times per day. Tight maternal glucose control (fasting glucose less than 90 mg/dL, and one to two hour postprandial glucose less than 140mg/dL) improves outcomes.

Insulin

Insect-syringe

For patients who fail diet and exercise, insulin is the gold standard for therapy. Regular insulin is safe during pregnancy due to its inability to cross the placenta in clinically significant amounts.

Ultrasound (or Nonstress Test (NST))

Ultrasound-machine

Periodic ultrasounds and nonstress tests (NST) are necessary to monitor fetal growth and well-being throughout pregnancy. NST is a common, noninvasive test that monitors fetal heart rate over a period of 20 minutes, in order to observe certain changes that indicate a normal and reactive fetus.

Delivery

Stork Delivering-baby

If insulin or an oral hypoglycemic agent were necessary for glucose control during pregnancy, then it may be necessary to induce labor at 39-40 weeks. Benefits of inducing labor include lower rates of macrosomia, lower rates of shoulder dystocia and lower rates of C-section. However if fetal weight is greater than 4500 grams, C-section is recommended in order to to prevent birth canal trauma or shoulder dystocia.

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