



Diabetes and Pregnancy



What is gestational diabetes?

Gestational diabetes also known as Gestational Diabetes Mellitus (GDM) is when a woman develops high blood sugar levels during her pregnancy. It is termed as gestational diabetes only when the high blood sugar levels are seen during the early second trimester.

What causes gestational diabetes?

Gestational diabetes is caused by not enough insulin in the setting of insulin resistance.

The risk factors include:

- Overweight
 - Previous gestational diabetes
 - Family history of type 2 diabetes mellitus
 - Polycystic ovarian syndrome
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Classification of gestational diabetes

Gestational diabetes is any degree of glucose intolerance with the onset of first recognition during pregnancy. GDM mostly occurs between 24-28 weeks of gestation.

White classification named after Priscilla White who pioneered the effect of diabetes types on perinatal outcome is widely used as maternal and fetal risk outcome. It mainly distinguishes between gestational diabetes and pregestational (overt) diabetes.

What are the criteria for gestational diabetes?

The test is performed by giving 100gm glucose to the patient and checking her blood sugar levels. This is according to carpenter and coustan classification.

- Fasting- 95mg/dl
- 1 hour- 180 mg/dl
- 2 hour- 155 mg/dl
- 3 hour- 140 mg/dl

Criteria for diagnosis of gestational diabetes according to National Diabetes Data Group are:

- Fasting - 105 mg/dl
- 1 hour - 190 mg/dl
- 2 hour - 165 mg/dl
- 3 hour - 145 mg/dl

What are the risk factors of gestational diabetes?

- Polycystic ovarian disease
- Previous gestational diabetes, impaired glucose tolerance, impaired fasting hyperglycemia
- Family history of type 2 diabetes mellitus
- Maternal age more than 35 years
- Ethnicity- High risk races include African-Americans, Afro-Caribbeans, Native Americans, Hispanics and South Asians
- Overweight mothers (BMI > 25) or severely obese (BMI > 30)
- Previous pregnancy with a child resulting in macrosomia (baby weight more than 4 kg)
- Poor obstetric history (many miscarriages)
- Genetic factors
- Smoking mothers
- Idiopathic (no cause known)

What are the symptoms?

Many pregnant women do not exhibit any symptoms although few women have:

- Increased thirst
- Increased urination
- Fatigue
- Nausea
- Vomiting
- Bladder infection
- Yeast infection
- Blurred vision (diabetic retinopathy)

What are the underlying causes of GDM?

Women with GDM have an insulin resistance that they cannot compensate for with increased production in the β -cells of the pancreas. Placental hormones and to a lesser extent increased fat deposits during pregnancy seem to mediate insulin resistance

during pregnancy. Cortisol and progesterone are the main culprits, but human placental lactogen, prolactin and estradiol contribute too.

Insulin resistance is a normal phenomenon emerging in the second trimester of pregnancy. It is thought so to secure glucose supply to the growing fetus. Women with GDM have insulin resistance that they cannot compensate for with the increased production of beta cells in the pancreas.

It is unclear why some women develop GDM. Few factors are also associated with autoimmunity and single gene mutations as well.

Whom should we screen for GDM?

We live in a country where diabetes is like our kith and kin. South Indians are prone to diabetes as we are rice eaters. All pregnant women irrespective of their age should be screened for diabetes. A basic test of fasting and post prandial 1.5 hour with glycosylated haemoglobin (HbA1c) should be performed.

For women with the above mentioned risk factors should be screened at an early gestational period with OGTT (oral glucose tolerance test) with 100gms of glucose.

How to monitor GDM mothers?

- Once GDM has been diagnosed, the mother should be taught about the risk factors and further management and planning.
- Blood sugar monitoring should be done every week. A home glucometer test should be done everyday to note the blood glucose values and titrate the dose of insulin or oral glycaemic drugs accordingly. The value has to be checked 6 times during the day - fasting, post breakfast, pre-lunch, post lunch, pre-dinner and post dinner.
- A strict diabetic diet should be followed along with 1 hour of brisk walk.
- A sudden increase in weight should be brought to notice.
- A fetal echocardiogram should be performed between 18-20 weeks to rule out fetal cardiac anomalies which are most common in GDM mothers.

Management and delivery:

Treatment of GDM with diet and exercise reduces the insulin resistance and the health problems associated with the mother and the unborn child.

The delivery should be planned much earlier than the estimated date of delivery as taking the diabetic mother to term may cause unexplained fetal demise. So the delivery should be induced before 38 weeks.

Since there is a delay in the production of cortisol, the fetal lung maturity will be delayed as a result of difficulty in spontaneous breathing and recoiling of the lung parenchymal tissues. To avoid this, the mother is given two shots of corticosteroid to enhance the production of type 2 pneumocytes in the lung which are responsible for breathing.

Change in lifestyle:

A preventive folic acid pill should be taken before conception and throughout pregnancy. A diabetic diet including caloric intake of 2,500 Kcal /day should be consumed.

Can oral drugs be given in GDM?

Of course! There are few drugs which do not cause any teratogenic effects to the baby which are metformin and glyburide. Although metformin is a better drug, in women who have very high blood sugar levels, insulin is the treatment of choice.

Delivery:

Delivery should be planned ahead and induced before 38 weeks of gestation. In cases of macrosomia (fetal weight >4 kgs), a planned caesarean section should be done.

Prognosis:

Usually, diabetes resolves soon after the baby is born although they have an increased risk of developing diabetes in the future. The risk is usually high till 5 years post-partum and thereafter comes to a plateau. Women have 30-84% chance of developing GDM in their subsequent pregnancies. After delivery, a repeat of glucose levels should be done at 6 weeks post-partum.

Children of GDM mothers do have an increased risk of childhood and adult diabetes mellitus.

Take home message:

Diabetes is not a disease, but a metabolic syndrome. There are many ways to overcome this by maintaining a healthy lifestyle, seeking medical attention appropriately, and regular exercise will reduce the morbidity and mortality of the mother and the unborn child.

Wishing all expectant mothers a sweet pregnancy and motherhood.

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