00:00:12

Hello and welcome to another episode of the APAOG podcast I'm the show's host and creator Morgan Bechtel, and today we'll be learning about gestational diabetes. This sickly sweet condition, pun intended, affects approximately 2 to 10% of pregnant people and can have a significant health consequences for both parent and child.

00:00:33

So hold tight to your glucola as we tackle the ins and outs of gestational diabetes.

00:00:50

Diabetes mellitus is a medical condition that has been known for centuries, but it wasn't until the 1800s, when the first case of gestational diabetes was published

00:00:59

In 1842, a doctor Henrick Benowitz in Berlin, Germany, published a case study on his 22 year old female patient who is experiencing increased thirst and a stale smelling urine. When the patient finally gave birth, the child, by his words, was herculean in size a whopping 12 lbs at birth.

00:01:20

The labor, as one could assume, was grueling for both mother and child, and unfortunately ended in still birth. Today, gestational diabetes is defined as a carbohydrate intolerance of variable severity with its onset or first recognition in pregnancy. Like all forms of hyperglycemia, gestational diabetes is characterized by insulin levels that are insufficient to meet insulin demands.

Although the causes of beta cell dysfunction and gestational diabetes is not well defined.

00:01:51

According to the Fifth International Conference on gestational diabetes, there are three identified categories that this dysfunction can fall into.

00:02:00

The first is autoimmune B cell dysfunction. Second is highly penetrant genetic abnormalities that lead to impaired insulin secretion and lastly is beta cell dysfunction that's associated with chronic insulin resistance.

00:02:15

Insulin resistance and pregnancy occurs primarily from placental secretion of diabetogenic hormones, including growth hormone, corticotropin, releasing hormone placental lactogen, prolactin and progesterone.

00:02:29

It is important to note that gestational diabetes mellitus is only occurring during pregnancy and it's separate from general diabetes mellitus.

00:02:40

Gestational diabetes increases the risk for many maternal and fetal complications in pregnancy, which is why screening has become a part of standard prenatal care.

00:02:50

Complications include having an infant that's large for gestational age, meaning that they have an estimated fetal weight greater than 90%. Another risk is having what's called macrosomia or having an infant whose birth weight is greater than 4000 grams, or approximately 8.8 lbs.

00:03:08

They also have a higher risk of developing gestational hypertension, or preeclampsia, as well as polyhydramnios, which is that excessive amniotic fluid. Stillbirth is also a complication as well as neonatal morbidity, meaning that the risk of hypoglycemia, hyperbilirubinemia, hypocalcemia polycythemia and respiratory distress, as well as cardiomyopathy can happen in neonates and lastly, gestational diabetes increases the risk of the parent developing gestational diabetes after the postpartum period is over.

00:03:44

Now there are multiple risk factors for gestational diabetes. This includes personal history of impaired glucose tolerance, meaning that they have a high fasting glucose or an A1C greater than 5.7 having a history of gestational diabetes in the past, or a family history of diabetes.

00:04:05

Having hypertension, cardiovascular disease or pre pregnancy, BMI of greater than 30.

00:04:11

Another risk factor includes excessive gestational weight gain during the 1st 24 week period.

00:04:17

Along with a personal history of PCOS or again diabetes.

00:04:21

If you are at risk for gestational diabetes, there are things that can be done to mitigate this risk. This mainly means lifestyle modifications, including following a low salt, sugar and low carb diet incorporating daily movements, exercises and smoking cessation.

00:04:41

Now we'll dive into how we screen for gestational diabetes.

00:04:44

Routine gestational diabetes screening occurs in the third trimester from approximately 24 to 28 weeks gestation, but early screening can occur in patients who are considered high risk. As mentioned above. Now gestational diabetes, now gestational diabetes, now screening starts initially with a 1 hour.

00:05:05

Glucose challenge test. This consists of the patient drinking a 50 gram oral glucose solution called glucola and then blood is drawn one hour later to determine the plasma glucose level glucola favors.

00:05:20

Glucose glucola flavors range glucola flavors include orange, lemon, lime, and fruit punch, and there are mixed reviews on the quality of their taste.

00:05:32

Now fasting is not required for this first Test, but patients are encouraged to stay resting and avoid eating, drinking or smoking during the hour between drinking the solution and their blood draw.

00:05:43

Now, when determining if the one hour glucose challenge test is positive, every organization is different, but it's generally accepted to be positive if the patient's glucose comes back as greater than 130 milligrams per deciliter.

00:05:56

If a one hour GCT or glucose challenge test is positive, then a three hour GTT, meaning a glucose tolerance test, is performed within one week, and typically a fetal ultrasound will also occur to assess growth and amount of amniotic fluid.

00:06:12

Typically, a positive result of the one hour GCT does not give official diagnosis of GDM. However, if a one hour GTT is greater than 200 milligrams per deciliter or greater than 180 milligrams per deciliter, and there are risk factors present, you can officially diagnose gestational diabetes.

00:06:33

Without the need to proceed with a three hour GTT.

00:06:37

Now the three GTT consists of a patient drinking 100 gram oral glucose solution. After they fast for a period of eight hours, but no more than 14 hours.

00:06:47

Blood samples are then collected from the patient at the following intervals fasting, meaning before the glucose is given, then one hour, 2 hours and three hours after the glucose load, patients are encouraged to carbohydrate load for three days prior to their GTT. That means greater than 150 grams of carbs a day.

00:07:07

A positive 3 hour GTT is diagnosed by having two out of four elevated values, a positive 3 hour GTT officially diagnosis a patient with gestational diabetes mellitus. However, having one elevated value on a 4 does

significantly increase the risk of adverse prenatal outcomes compared to women without gestational diabetes Mellitus or meaning without glucose intolerance?

00:07:32

There are some patients who are unable to tolerate.

00:07:34

The oral glucose test.

00:07:35

This includes patients with a history of gastric bypass gastroparesis or significant nausea and vomiting during the pregnancy.

00:07:42

For these patients, potential proposed methods for gestational diabetes screening includes monitoring the blood glucose levels for one to two weeks at baseline without any dietary diabetes, modifications in early pregnancy.

00:07:55

If everything's normal, then we repeat monitoring for one to two weeks at 24 to 28 weeks gestation.

00:08:02

Another way of screening includes checking the fasting glucose and hemoglobin A1C at baseline and as normal, checking again at 24 to 28 weeks.

00:08:11

And by normal I mean a fasting blood sugar less than 95 milligrams per deciliter and an A1C less than 5.7 once a patient is diagnosed with gestational diabetes, they will start daily at home blood sugar monitoring.

00:08:24

Glucose goals include a fasting blood sugar less than 95 milligrams per deciliter, a one hour postprandial blood glucose, less than 140 milligrams per deciliter.

00:08:34

And a two hour postprandial blood glucose, less than 120 milligrams per deciliter.

00:08:39

There are generally 2 approaches to treatment, and those are one lifestyle modifications and dietary controls, and two medication management as well as lifestyle changes.

00:08:50

There are many benefits to treating gestational diabetes. The 2005 Australian Carbohydrate Intolerance study in pregnant women's trial found that treatment was associated with a significant reduction in primary

outcomes, meaning the rate of serious newborn complications meeting perinatal death, shoulder dystocia and birth trauma, including fracture or nerve palsy.

00:09:11

Decreased USPSTF systematic review also showed that treatment of gestational diabetes leads to reduced risks of preeclampsia, shoulder dystocia and macrosomia. ACOG recommends that dietary counseling be provided by a registered dietitian when possible in order to individualize meal planning and assess nutritional needs, when available. We can also recommend a diabetic friendly diet, such as utilizing the ADA plate method. AAPA has a national priority of nutrition and provides education on caloric allotment carbohydrate intake of 33 to 40% and caloric distribution, a moderate exercise program, meaning approximately 30 minutes a day is also thought to improve maternal health and aid in blood sugar control.

00:09:56

It's important to note that patients should discuss with their OB first to ensure that there are no contraindications to exercise during their pregnancy. If blood sugar is unable to be maintained by lifestyle alone, pharmacotherapy is warranted. Failure of lifestyle modification is determined to be when greater than 30% of blood sugar values in a week are above target range.

00:10:18

When it comes to medication, insulin is considered the superior treatment option. However, oral hypoglycemic agents are increasing in popularity despite the fact they have not been approved by the FDA. For this indication and their big concerns in the past regarding safety of oral anti diabetic meds in pregnancy.

00:10:37

Of the multiple oral agents available to treat diabetes, metformin is really the only one that's used in pregnant patients for blood glucose control.

00:10:45

Glyburide used to be used but has since fallen out of favor as it has been shown to increase risk of macrosomia and neonatal hypoglycemia. Turbine, metformin. It's part of the Biguanide drug class and works by inhibiting hepatic gluconeogenesis and glucose absorption and stimulates glucose uptake in the peripheral tissues.

00:11:07

The main side effect is GI upset, which will typically improve overtime. Now the starting dose for metformin is 500 milligrams once a day or twice a day, and we increase by 500 milligrams weekly until glycemic control is achieved. 50% of patients on metformin will be unable to achieve glycemic goals.

00:11:27

However, in patients who decline insulin or are unable to administer insulin. Metformin is preferred alternative agent.

00:11:36

Now let's talk about the use of insulin to treat gestational diabetes mellitus. Again, this is the preferred method of treating gestational diabetes and it's supported by the FDA.

00:11:47

Insulin should be administered in divided doses using a combination of basal and bolus insulin.

00:11:53

Basal insulin targets fasting and pre brand new blood sugars. We have long acting versus intermediate acting basal insulins, now long acting, is usually preferred given that there's no peak and there's more predictable absorption.

00:12:08

When it comes to bolus insulin, this is targeting post prandial blood sugars and there's rapid acting like lispro or aspart versus short acting insulins. The rapid acting is typically preferred given that it has a more favorable activity profile. The type of insulin prescribed typically depends on the patient's insurance coverage.

00:12:29

The starting dose is determined based on body weight and trimester, or can be tailored to the target specific periods of elevation throughout the day. Once diagnosed with gestational diabetes, there are certain maternal and fetal surveillance practices that can and should be done.

00:12:44

A fetal echo should be considered for patients with early diagnosis of gestational diabetes, meaning prior to 20 weeks and with a hemoglobin A1C of greater than 6%. Now the ideal timing for fetal echo is between 22 and 24 weeks.

00:13:03

For pregnant persons who do not appear to have increased risk of stillbirth, a serial growth ultrasound can be done every four weeks on diagnosis or following a 20 week anatomy scan.

00:13:15

Twice weekly NST, BPP will often be done at 40 weeks gestation, and expectant management will be done up to 40 weeks in six days gestation, at which point the patient would be induced. For pregnant persons who are at increased risk for cell birth. The twice weekly NST BPP starts at 32 weeks gestation.

00:13:35

The timing of delivery also changes depending on the level of glucose control.

00:13:41

Well-controlled patients, delivery is going to occur anywhere from 39 weeks and 0 days to 39 weeks and six days.

00:13:49

For poorly controlled patients, delivery is going to happen anywhere between 37 and 39 weeks. As for the motive delivery, a patient should be counseled regarding risks and benefits of a scheduled caesarean when the estimated fetal weight is greater than 4500 grams or 9.9 lbs.

00:14:08

During the postpartum period, a 2 hour glucose tolerance test should be performed on all patients with diabetes, impaired fasting glucose levels or impaired glucose tolerance at 4 to 12 weeks postpartum to establish glucose status. Up to 1/3 of women with gestational diabetes mellitus will have diabetes mellitus or impaired glucose metabolism on postpartum screening. Repeat testing should be done every three years due to increased risk of developing type 2 diabetes.

00:14:38

If a patient is planning on subsequent pregnancies, screening more frequently between pregnancies can detect glucose intolerance before fertilization and therefore provides an opportunity for preconception glucose control.