Brief Overview of Gestational Diabetes Mellitus (GDM)

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Objectives

- Overview of Gestational Diabetes Mellitus:  
  - Etiology  
  - Risk Factor Criteria’s  
  - Potential Pregnancy Complications  
  - Testing – Screening vs. Diagnostic  
  - Treatment Interventions  
  - New Postpartum Testing ACOG Guidelines  
  - Long Term Sequela for GDM Patient
**Gestational Diabetes Mellitus (GDM)**

- Gestational diabetes occurs in some pregnant women who never had diabetes before but have high glucose levels during pregnancy.

- Changing hormones and weight gain are part of a healthy pregnancy. However, the body has to produce much more insulin to keep up with these changes. **GDM arises when the pancreas doesn’t produce enough insulin** to meet this need.

**Etiology**

- Placenta

- insulin resistance

- Starts in 2\textsuperscript{nd} trimester

- Glucose crosses the placenta, insulin does not

- Fetal insulin

Risk Factor Criteria’s

• Overweight/Obesity

• **Mother’s age**--risk increases as woman gets older (especially women over 35 years of age)

• Certain Ethnic groups: Hispanic, AA, Native American, Asians, and Pacific Islanders

• History of GDM

• Polycystic Ovarian Syndrome (PCOS)

Cont…Risk Factor Criteria’s

• History of no GDM but LGA (greater than 9 lbs)

• First Relative with DM (Mom, Dad, Sibling)

• History of previous unexplained stillbirth

• Poor OB history i.e. lot’s of miscarriages/congenital anomalies
## Gestational Diabetes Problems

<table>
<thead>
<tr>
<th>Mother</th>
<th>Baby</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Large baby</td>
<td>• Large baby-birth trauma</td>
</tr>
<tr>
<td>• C-Section Delivery</td>
<td>• Low blood sugar after delivery- treated with early feedings, generally no long term consequences.</td>
</tr>
<tr>
<td>• Longer recovery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Risk of developing type 2 diabetes later.</td>
</tr>
<tr>
<td></td>
<td>• More likely to become obese during childhood/ adolescence.</td>
</tr>
<tr>
<td></td>
<td>• Risk of developing type 2 diabetes later.</td>
</tr>
</tbody>
</table>


## Potential Pregnancy Complications

- Miscarriages
- Birth Defects
- Macrosomia
- Preterm Labor and Preterm Deliveries
- Pre-eclampsia

- Increase Labor & Delivery Complications
  - Increase Infections
  - Shoulder Dystocia
  - Fetal Distress
  - Increase C/S (esp primary)
GDM Testing

• Screen All Pregnant Women
  – Screen via:
    • Patient’s History
    • Assessing Clinical Risk Factors
    • Laboratory screening test (most common)
Screening vs. Diagnostic Testing

- Glucose Loading Test – is the 1 hour screening test (GLT -AKA – Glucose Challenge Test [GCT])

- Oral Glucose Tolerance Test (OGTT)

- ADA Screening – accepts the one step approach (going straight to the OGTT without a screening test) or the two step approach (screening first with the 50-g, 1hr, then the OGTT if the screening is abnormal)

Glucose Loading Test (GLT; AKA the Glucose Challenge Test)

- Screening Test not diagnostic
- 50-g of glucola, 1 hour
- Done mostly between 24-28 wks or sooner if indicated
- Cut off range varies from 130 to 140 due to the test sensitivity
  - Using cut off point of 130 gives you a 90% sensitivity rate vs. cut off point of 140 gives you 80%.
  - Some folks use a happy median of 135 as a cut off point (85% sensitivity).
Case Studies

• Case 1:
  • G2 P1001 at 16 weeks who came in for her initial OB history. She reports having a 9 ½ lb baby in the previous pregnancy where she had GDM. Today she feels fine and has no complaints. What should happen at this visit?

• Case 2:
  • G1 P0 20 y.o. Hispanic female with no complaints in at her 28 weeks. No neg history. What testing should take place?
    – Her Screening Test comes back 150, what actions should take place?
    – What if the screening test result was 120?

Oral Glucose Tolerance Test (OGTT)

• Diagnostic Test
  • 100 – g Glucola, 3-hour

• Procedure
  • Two or more thresholds = a positive diagnosis
American Diabetes Association 100 g OGTT
Abnormal Values

Need two of the following values to meet or exceed for a positive diagnosis of GDM:

- Fasting blood glucose level ≥95 mg/dl
- 1 hour blood glucose level ≥180 mg/dl
- 2 hour blood glucose level ≥155 mg/dl
- 3 hour blood glucose level ≥140 mg/dl

Present Treatment Interventions for GDM

- Diet
- Exercise
- Oral Meds: Metformin vs. Glyburide
- Insulin
- Monitoring Regimen
  - Glucose Monitoring
  - NSTs starting 32 weeks
  - Ultrasounds – BPP and Fetal Growth Checks
## Biophysical Profile (BPP)

**Table 1. Criteria for Coding Fetal Biophysical Variables as Normal or Abnormal**

<table>
<thead>
<tr>
<th>Biophysical Variable</th>
<th>Normal (Score = 2)</th>
<th>Abnormal (Score = 0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fetal breathing</td>
<td>1 or more episodes of ≥20 s within 30 min</td>
<td>Absent or no episode of ≥20 s within 30 min</td>
</tr>
<tr>
<td>movements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross body</td>
<td>2 or more discrete body/limb movements within 30 min (episodes of active continuous movement considered as a single movement)</td>
<td>&lt;2 episodes of body/limb movements within 30 min</td>
</tr>
<tr>
<td>movements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fetal tone</td>
<td>1 or more episodes of active extension with return to flexion of fetal limb(s) or trunk (opening and closing of hand considered normal tone)</td>
<td>Slow extension with return to partial flexion, movement of limb in full extension, absent fetal movement, or partially aojuin fetal hand movement</td>
</tr>
<tr>
<td>Reactive FHR</td>
<td>2 or more episodes of acceleration of ≥15 bpm* and ≥15 s associated with fetal movement within 20 min</td>
<td>1 or more episodes of acceleration of fetal heart rate or acceleration of &lt;15 bpm within 20 min</td>
</tr>
<tr>
<td>Qualitative AFV</td>
<td>1 or more pockets of fluid measuring ≥2 cm in vertical axis</td>
<td>Either no pockets or largest pocket &lt;2 cm in vertical axis</td>
</tr>
</tbody>
</table>

*BPMs per minute
Gestational Diabetes- A risk factor for Type 2 Diabetes

- Although GDM goes away after delivery in majority of cases, type 2 diabetes occurs in 5 to 10 percent of women immediately.

- Women who have had GDM have a 40 to 60 percent chance of developing type 2 diabetes in the next 5-10 years following pregnancy.

Preventing or Delaying developing Type 2 diabetes after pregnancy with GDM

<table>
<thead>
<tr>
<th>Weight</th>
<th>Reach and maintain reasonable weight (Lose 5 to 7 percent of weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Activity</td>
<td>Exercise for 30 minutes most days.</td>
</tr>
<tr>
<td>Healthy Eating Plan</td>
<td>Eat more vegetables, fruits and whole grains.</td>
</tr>
<tr>
<td>Check Sugar levels</td>
<td>Remind healthcare provider to check sugar levels regularly.</td>
</tr>
<tr>
<td>Breastfeed</td>
<td>To reduce the risk of developing type 2 diabetes, and to reduce obesity and possibly prevent diabetes among offspring later.</td>
</tr>
</tbody>
</table>
Long Term Sequela for GDM Patients

- Repeat of GDM and its complications for future pregnancies
- Developing type 2 diabetes
- If develop type 2 diabetes, developing all the chronic long term problems
  - Circulation Problems
  - Poor healing
  - Strokes, heart disease, oral health problems
  - Blindness
  - Renal Problems

New Postpartum Testing ACOG Guidelines

- Broader testing range – 6 to 12 weeks
- FPG (FBS) and/or 75 g 2 hr OGTT
- Assess if normal vs. impaired vs. type 2 diabetic
- Due appropriate counseling and intervention based on results
Gestational diabetes
FPG or 75-g 2 hr OGTT at 6-12 weeks

Normal
FPG < 100
75-g OGTT < 140

Impaired fasting glucose or both (meaning both the fasting and the GTT was done and fell into these ranges)
FPG = 100-125
75-g OGTT = 140-199

Diabetes mellitus
FPG ≥ 126
75-g OGTT ≥ 200

Refer for diabetes management

-Assess glycemic status every 3 years
-Weight loss and physical activity counseling as needed
-Consider referral for management
-Weight Loss and Physical activity Counseling as needed
-Consider metformin if combined impaired fasting glucose and IGT
- Medical Nutrition Therapy
-Yearly assessment of glycemic status

Source: ACOG COMMITTEE OPINION, # 435, June 2009

FYI-Please Visit The Following Site For Upcoming Changes in GDM Testing, Which Were Mentioned During the Q&A Period of This Presentation. Thanks

THANK YOU FOR ATTENDING!!