OBESITY AND PREGNANCY

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Disclosures

• Annie McCartney, MSN, WHNP-BC
  – Nothing to disclose
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  – Nothing to disclose
Objectives

By the end of this presentation, the learner should be able to:

• Understand current definitions of obesity in non-pregnant and pregnant women.
• Recognize causes of increased risk of preterm delivery among obese pregnant women.
• Identify both maternal and neonatal complications related to obesity and pregnancy.
YOU'VE PUT ON A LITTLE WEIGHT SINCE LAST...

GIMME A MINUTE!!
Patient Myths

• More weight gain = healthier baby
• I’m eating for two.
• It will easily come off after delivery
  – Especially if I am breastfeeding
• Its Unavoidable: expected part of being a mom
• There is no risk to baby
Provider Myths

- “Talking about weight will offend my patients.”
- “My weight makes me uncomfortable. How can I counsel my patients on their weight if I struggle with mine?”
- There are too many other priorities that weight falls behind in importance.
## Defining Obesity

### CDC Definitions of Obesity

<table>
<thead>
<tr>
<th>Category</th>
<th>BMI Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Weight</td>
<td>BMI 18.5 – 24.9</td>
</tr>
<tr>
<td>Overweight</td>
<td>BMI 25 – 29.9</td>
</tr>
<tr>
<td>Obese</td>
<td>BMI ≥ 30</td>
</tr>
<tr>
<td>Class I Obesity</td>
<td>BMI 30 – 34.9</td>
</tr>
<tr>
<td>Class 2 Obesity</td>
<td>BMI 35 – 39.9</td>
</tr>
<tr>
<td>Class 3 Obesity (Morbid Obesity)</td>
<td>BMI ≥ 40</td>
</tr>
</tbody>
</table>

BMI = weight in kg/height in meters sq
Incidence of Obesity

• In the US:
  – 56% of non-pregnant women of childbearing age are overweight.
  – 30% of non-pregnant women of childbearing age are obese.

• Worldwide:
  – 15-20% of women are obese

Flegal, Carroll, Kit, Ogden (2012)
Obesity Trends* Among U.S. Adults
BRFSS, 1990, 2000, 2010
(*BMI ≥30, or about 30 lbs. overweight for 5’4” person)

Source: Behavioral Risk Factor Surveillance System, CDC.
Mississippi, Alabama, Arkansas, and Louisiana have the highest concentration of obese counties in the nation.

- In total, 35% of Alabamians weigh-in as obese.
- Greene county in central Alabama has the highest concentration of obese adults in the entire nation with a percentage of 47.6%.

Obesity in Alabama

- According to the CDC, 69% of adults in Alabama are considered overweight, with BMI of 25 or greater.
  - 32 - 35% of these are classified as obese or morbidly obese with BMI of 30% or greater
- Estimated yearly medical costs for obese adults on average $1429 higher than those of normal weight.
Obesity in Pregnancy

- Defined as pre-pregnancy BMI ≥ 30
- Increased incidence of both maternal and neonatal/fetal complications.

American College of Obstetricians and Gynecologists (2013)
Obesity and Pregnancy

- Proposed etiology of increased complications in obese pregnant patients:

1. **Obesity: state of chronic, low-grade inflammation.**
   - Can account for increased incidence of diabetes and hypertension among other diseases

2. **Pregnancy: state of altered immunity and inflammation.**

3. **Combined: leads to state of significant, chronic inflammatory response that can be harmful to both mother and fetus.**

Madan, Chen, Goodman, Davis, Allan, & Dammann (2010)
Obesity and Pregnancy

• What does this mean?
  – Inflammation sets off a cascade of events which can lead to other complications.
  – Often these complications lead to elective medically-indicated preterm induction/delivery.

• What can we do?
  – Break the chain
Obese pregnant patients are at increased risk for:

- First trimester loss
- Recurrent pregnancy loss
- Gestational Hypertension
- Pre-eclampsia
- Gestational Diabetes
- Chorioamnionitis
- Elective preterm birth
- Stillbirth
- Higher rates of C-Section
- LGA and Shoulder Dystocia
- DVT/PE
- Anesthetic Complications

American College of Obstetricians and Gynecologists (2013)
Obesity and Preterm Delivery

- Spontaneous PTD: conflicting evidence
- Elective PTD: Most incidences of PTD in obese pregnant patients are elective, medically-indicated secondary to medical or obstetric complication(s).
- Accounts for up to 40% of all preterm births.

McDonald, Hen, Mulla, & Beyene (2010)
Torloni, et al. (2009)
Preterm Delivery

- US (2012): more than 450,000 babies born preterm
- Preterm birth accounts for up to 35% of all infant deaths.
- Alabama (2012): Scored an “F” on MOD Preterm Birth Report Card with rate of 14.6%

Centers for Disease Control and Prevention (2010)
March of Dimes (2012)
Elective Preterm Induction

• Most common causes of elective preterm induction of labor:
  – Pre-eclampsia, fetal distress, SGA/IUGR, placental abruption

• These often occur as a result of hypertension or diabetes (whether pre-existing or gestational).
  – Both are more common in obese patients

Torloni, et al. (2009)
Miscarriage and Obesity

• First Trimester Pregnancy Loss
  – Data is inconclusive

• Study of approximately 30,000 patients:
  – Risk of Spontaneous Abortion (SAB)
    • 14% of obese patients
    • 11% of normal weight patients
      – OR 1.31, 95% CI
  – Risk of Recurrent SAB
    • 0.4% of obese patients
    • 0.1 % of normal weight patients
      – OR 3.51, 95% CI

Boots & Stephenson (2011)
Yoge & Visser (2009)
Hypertension

• One of the most common complications of pregnancy
  – Occurs in 10% of pregnancies

• 2 general categories:
  – Pre-existing (chronic) hypertension
  – Pregnancy-related Hypertension
    • Gestational Hypertension
    • Pre-eclampsia
    • Eclampsia

Jim, Sharma, Kebede, & Acharya (2010)
Pre-existing Hypertension

- Pre-existing (chronic) hypertension is more common among obese women.
- Incidence: 3% of pregnant women
- More common in obese patients
  - 3-fold increase in PTB prior to 35 weeks.
- \(~10-25\%\) will develop superimposed pre-eclampsia.
  - 2.7 fold increase in risk for severe pre-eclampsia

Jim, Sharma, Kebede, & Acharya (2010)
Gestational Hypertension

• Also known as Pregnancy-Induced Hypertension
  – Affects 5-10% of all pregnancies
• Obese patients 2.5 – 3.2 fold increase in risk
  – The higher the BMI the higher the risk of gestational hypertension.
• Almost 50% of these women will go on to develop pre-eclampsia

Beckman, et al. (2014)
Jim, Sharma, Kebede, & Acharya (2010)
Pre-Eclampsia

- Affects 5% of all pregnancies
- Obesity increases risk of pre-eclampsia 3-fold
  - 30% of all patients with pre-eclampsia are obese
  - Central obesity creates much higher risk
- Considered to be a systemic intravascular inflammatory response whose cure is delivery.
- Pre-eclampsia can lead to decreased placental perfusion which leads to medically-indicated preterm delivery secondary to fetal distress or IUGR in about 30% of all cases

Jim, Sharma, Kebede, & Acharya (2010)
Pre-existing Diabetes

• One of the two most common medical complications among obese pregnant women.
  – CDC: occurs in 2-5 per 1000 pregnancies
  – Type 2 more common than Type 1

• 2-fold increase in pre-eclampsia

• Complications: pre-eclampsia, macrosomia, Miscarriage, IUFD, polyhydramnios, DKA
  – All of which can necessitate elective medically-indicated PTD.
Gestational Diabetes

- Prevalence: 3-15% and continues to climb.
- Obese pregnant patients have 2.6-4.0 fold increase in risk for development of GDM
  - Obese patients: risk of 20% for GDM
  - Increases 0.92% for every increase of 1 kg/m2.
- Control of GDM is affected by obesity
  - 2/3 of morbidly obese pts with GDM failed to achieve glycemic control and required treatment with insulin.
  - Insulin treatment: 3-fold risk for pre-eclampsia
Chorioamnionitis

• More common in obese pregnant women
• Thought to be secondary to increased inflammatory and decreased immune state of obesity and pregnancy.
• Implicated in pathogenesis of PROM, preterm birth, and increased neonatal mortality.

Madan, Chen, Goodman, Davis, Allan, & Dammann (2010).
Risk of Stillbirth

• Incidence of IUFD is 2 times more likely in overweight pregnant women
  – 2.5 times more likely in obese women
• Pathophysiology unknown
• Significant racial disparity:
  – Higher rates among African American women

Ehrenberg, et al. (2009)
Take Home Points

• Obesity is a modifiable risk factor
• Talk to your patients about their weight
• Work with your patients diligently to help them minimize their risk for preterm birth.
  – Giving same emphasis to obesity as you do other disorders such as diabetes and hypertension
We’ve been doing it wrong!


