BMI, Gestational Weight Gain and Angiogenic Biomarker Profiles for Preeclampsia Risk

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Abstract

Objective: In May 2009, after considering short- and long-term morbidities and outcomes, the Institute of Medicine (IOM) revised recommendations for gestational weight gain (GWG). IOM recommendations were based on previous data and presumed a normal BMI (18.5–24.9) and normal weight gestational HTN in at least 1000 pregnant hypertensive patients. We hypothesized that overweight/obese (OW-OB) women and over-gainers would have altered angiogenic profiles as compared to under-weight/normal-weight (U-N) women and under-appropriate-gainers (U-AG), respectively.

Materials & Methods

• Pregnant subjects ≥24 weeks gestation enrolled from outpatient Obstetrics-Gynecology clinics at UMass Memorial Health Care between May 2004 and January 2006.
• Each subject had ≥1 of the following risk factors for pre-eclampsia:
  - Hypertension
  - History of Pre-eclampsia
  - Chronic HTN

Background

• In May 2009, after considering short- and long-term morbidities and outcomes, the Institute of Medicine (IOM) revised recommendations for gestational weight gain (GWG). However, pre-eclampsia was dismissed due to insufficient evidence.

• Despite several studies that have published the association between GWG and pre-eclampsia, these studies have been performed in small sample sizes.

Objectives:

- To evaluate pre-eclampsia risk by angiogenic-biomarker profile by both BMI and GWG-adherence.
- Hypothsis

- We hypothesized that overweight/obese (OW-OB) women and over-gainers (OG) would have altered angiogenic profiles as compared to under-weight/normal-weight (U-N) women and under-appropriate-gainers (U-AG), respectively.

Analysis

- Analytic sample included 82 subjects (342 specimens).
- Demographic comparisons utilized Fisher exact test for categorical variables.
- Mean GWG was compared in each BMI category by Student’s t-test.
- Within-women correlation and right-skewness handled by estimating linear mixed models for ln-transformed biomarkers.

Results

- Findings suggest trends that OW-OB BMI and excessive GWG associated with pre-eclampsia risk.
- BMI and GWG as potentially modifiable factors merit further investigation for pre-eclampsia risk.

Conclusion

- Small sample size required collection of OW-OB and OW-GGW. Secondary analysis not powered for this exploratory analysis.
- Only had total GWG at end of pregnancy.

BMI, Gestational Weight Gain & Angiogenic Biomarker Profiles for Preeclampsia Risk

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Results

- Geometric mean (sFlt1+sEng)/PlGF
- Overweight/Obese
- Mean lower in all windows in OG compared to U-AG (Figure 4–6)
- Mean PLGF lower in all windows in OG compared to U-AG (Figure 5)
- Mean sFlt1 lower in all windows in OG compared to U-AG (Figure 4)

Materials & Methods

- Several studies have introduced adiposity's ability to stimulate angiogenesis, we hypothesized that overweight/obese (OW-OB) women and over-gainers (OG) would have altered angiogenic profiles as compared to under-weight/normal-weight (U-N) women and under-appropriate-gainers (U-AG), respectively.

- Objective: To evaluate pre-eclampsia risk by angiogenic-biomarker profile by both BMI and GWG-adherence.

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