A Prospective Study Of Insulin Resistance, Glucose Intolerance And Infant Birth Weight

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Objective: We sought to investigate the relationship between early glucose intolerance, third trimester glucose intolerance and infant birth weight.

Study design: Fasting serum samples from 439 women in the Massachusetts General Hospital Obstetrical Maternal Study were collected from 16-18 weeks gestation and analyzed for HOMA. GLT was collected as part of routine care. We hypothesized that both early insulin resistance and later glucose intolerance would affect infant birth weight and risk of macrosomia-related c-section. We used linear regression to predict infant birth weight as a function of pre-pregnant BMI, gestational weight gain, maternal age, HOMA and GLT. Using logistic regression, we modeled risk of c-section and macrosomia as a function of those variables.

Results: 73 women delivered macrosomic infants. 52 women underwent a c-section for macrosomia or failure to progress. Neither HOMA nor GLT were predictive of infant birth weight. Significant predictors of infant birth weight were gestational weight gain (p<0.001), pre-pregnancy BMI (p<0.001) and maternal age (p=0.02). Pre-pregnant BMI and gestational weight gain were significantly associated with risk of macrosomia. Pre-pregnant BMI and GLT were also significantly associated with risk of c-section for macrosomia or failure to progress.

Conclusion: These data suggest that maternal BMI and gestational weight gain should be emphasized when attempting to modify risk of fetal macrosomia and associated adverse outcomes.