Analyzing the Predictive Value of an Early 1-hour Glucose Tolerance Test in High-Risk Pregnancies

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Introduction: In pregnancies at elevated risk for developing gestational diabetes mellitus patients undergo an early glucose tolerance test (eGTT) before 20 weeks gestation. This study aimed to assess the predictive value of a 1-hour eGTT as it relates to the repeat 1-hour glucose tolerance test (rGTT) at 24-28 weeks gestation.

Methods: Sixty individuals with BMI >30 who received an eGTT and a rGTT were identified via retrospective chart review. Covariates included age and ethnicity. Risk ratios, 95% (Score) confidence intervals, and significance (Fisher's Exact Test) were estimated. A logistic regression model was fit with rGTT (dependent variable) and eGTT (independent variable). Odds ratios and 95% confidence intervals were extrapolated from the model. Significance of each independent variable was identified via a likelihood ratio test. IRB #5802 Exempt Status Granted on 5/13/2024 by Colorado State University.

Results: Seventy-one percent of those who failed eGTT failed rGTT. After adjusting for age and ethnicity, individuals who failed eGTT had 3.70x greater odds (95% CI:1.03x-15.80x) of failing rGTT compared to those who passed eGTT ($\chi 2=4.05;p=0.04$).

Conclusions/Implications: These data suggest that failing a 1-hour eGTT is significantly associated with failing a 1-hour rGTT which indicates a potential benefit in proceeding directly to a 3-hour rGTT at 24-28 weeks. Further investigation of this predictive value with a larger sample size and broader range of patient risk factors is needed to fully understand the necessity of a 1-hour rGTT as it relates to failure of eGTT in clinical practice.