Reducing the Need for Complex Tests Early Pregnancy HbA1c Predicts Gestational Diabetes

A study reveals that measuring early pregnancy glycated hemoglobin could serve as a simple and effective screening test for gestational diabetes.

Study

In this study, the scientists investigated the utility and effectiveness of early pregnancy HbA1c measurement in predicting gestational diabetes. HbA1c is a blood test that measures the amount of glucose attached to hemoglobin in red blood cells. The test shows the average blood sugar level over the past 2–3 months.

The study population included adult pregnant women from two low-to-middle-income countries (India and Kenya) and one high-income, multi-ethnic country (UK). The participants were all at less than 16 weeks of gestation.

Early pregnancy HbA1c was measured, either alone or as part of a composite risk score with age, body mass index (BMI), and family history of diabetes, to predict gestational diabetes at 24–28 weeks of gestation.

The study also determined the effectiveness of these composite risk scores in reducing the reliance on OGTTs.

Study Findings

A total of 3,070 pregnant women from India, 4104 women from Kenya, and 4,320 women from the UK underwent oral glucose tolerance tests. Based on the oral glucose tolerance test at 24–28 weeks of gestation, the prevalence of gestational diabetes was 19.2% in India, 3.0% in Kenya, and 14.5% in the UK.

Early pregnancy HbA1c was found to be independently associated with the incidence of gestational diabetes at 24-28 weeks of gestation. The adjusted risk factor for HbA1c were 1.6 in India, 3.49 in Kenya, and 4.72 in the UK.

Composite risk score models that combine HbA1c with the known risk factors of gestational diabetes (age, BMI, and family history of diabetes) emerged as the most reliable predictors of gestational diabetes diagnosis at 24-28 weeks of gestation.

The study applied a population-specific, two-threshold screening method for ruling in and ruling out gestational diabetes using the early pregnancy composite risk score. This method could avoid 50% of oral glucose tolerance tests in India, 64% in Kenya, and 55% in the UK.

The proportions of OGTTs that can be avoided by using HbA1c alone were 5.4% (rule in) and 4.9% (rule out) in India, 6.0% (rule in) and 5.2% (rule out) in Kenya, and 5.6% (rule in) and 5.2% (rule out) in the UK.

Conclusion

The study finds that early pregnancy HbA1c can be a reliable predictor of gestational diabetes at 24-28 weeks of gestation in women living in low-, middle-, or high-income countries.

Early pregnancy HbA1c, either independently or in combination with common risk factors (age, BMI, and family history of diabetes), successfully identified 50% of pregnant women who developed gestational diabetes in late pregnancy.

The two-threshold approach adopted in the study stratified women into three categories at early pregnancy: those at the highest risk (rule-in gestational diabetes), the lowest risk (rule-out gestational diabetes), and those at medium risk (selective OGTTs at 24-28 weeks of gestation).

The study finds that this approach could significantly reduce the need for conducting OGTTs by 50% to 64% in different populations.

The study did not include women with severe anemia hemoglobinopathies, which are prevalent health conditions in low- and middle-income countries. However, the subgroup analysis conducted in the study showed that lower hemoglobin levels only minimally impact HbA1c in women with low-to-moderate anemia.

Overall, the study indicates that early pregnancy HbA1c has the potential to serve as a simple, accessible screening test for gestational diabetes. This test can be conducted at home or in remote settings. Implementing this test more broadly could improve pregnancy outcomes, especially among high-risk women who often do not get screened.

Source:

https://www.news-medical.net/news/20240915/Early-pregnancy-HbA1c-predicts-gestational-diabetes-reducing-the-need-for-complex-tests.aspx