PRESS RELEASE

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Blood sugar level at gestational diabetes diagnosis linked to harmful outcomes for mothers and babies

The higher the blood sugar level in pregnant women when first diagnosed with diabetes, the higher the risk of complications around and after birth, according to research presented at the 26th European Congress of Endocrinology in Stockholm. For every 5mg/L above the diagnosis threshold, the risk of newborns having low blood sugar levels, or a large birth weight, rises by 9% and 6%, accordingly, while mothers have a 31% higher risk of diabetes after birth. The findings suggest that high-risk women with gestational diabetes should be classified further to limit these complications for both mothers and newborns.

Gestational diabetes — a condition in which women have elevated blood sugar, or glucose, levels during pregnancy — affects around 20 million pregnancies worldwide and poses increased health risks for both mothers and their babies. For example, mothers are more likely to develop type 2 diabetes and to give birth to especially large babies who face a high risk of birth injuries or even obesity later in life. Women are diagnosed with gestational diabetes if their fasting (pre-meal) blood glucose levels are above 92 mg/dL in the first trimester or their 2-hour oral post-meal glucose levels (OGTT) in the second trimester is above 153 mg/dL.

In this study, researchers from the Tâmega e Sousa Hospital Center in Portugal analysed data on blood sugar levels and birth complications of 6,927 pregnant women, aged 30-37 years old, who carried one child and were diagnosed with gestational diabetes between 2012 and 2017. The researchers found that for every 5mg/L increase in their blood sugar levels, there was a 9% higher risk of low blood sugar (hypoglycemia) and a 6% higher risk of large birth weight (large for gestational age) in newborns and a 31% higher risk of maternal high blood levels (hyperglycemia) after birth.

“While it is not surprising that high glucose levels are associated with these adverse outcomes in mothers and newborns, our study shows for the first time how much increase in risk there is with 5 mg/dL of increase in the mother’s blood glucose levels when first diagnosed with gestational diabetes,” said co-lead researcher Dr Catarina Cidade-Rodrigues.

Dr Cidade-Rodrigues continued: “The magnitude of elevated risk can be calculated with our measurements and, in practice, could be used to identify and stratify women at higher risk of developing these complications.”

“We now want to evaluate if there is a benefit in further stratifying these high-risk women with gestational diabetes, who will need to be more closely monitored and to whom pharmacological interventions can be carried out appropriately. This may help reduce complications during labour and in newborns and prevent future diabetes in these women.”

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Abstract
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Glucose at gestational diabetes diagnosis predicts neonatal hypoglycaemia, large-for-gestational age and post-partum abnormal maternal glucose homeostasis

Introduction: Hyperglycaemia has been associated with worse maternal and foetal outcomes as well as higher risk for future type 2 diabetes (T2D).

Objectives: We study the association between glucose above diagnostic threshold (GADT) at gestational diabetes (GD) diagnosis and risk of perinatal complications and maternal glucose abnormalities at post-partum.

Materials and Methods: Retrospective study based on the national register of GD. Included women with live-born singleton pregnancies followed between 2012 and 2017. Excluded women without data on variables of interest. GADT defined as higher difference between measured glucose and diagnostic threshold at first trimester fasting glucose or 24-28th week OGTT. Primary endpoint: hypertensive disorders of pregnancy (HDP) – preeclampsia or gestational hypertension; preterm labour (PTL), caesarean section (CS), hypoglycaemia, large-for-gestational-age (LGA), and abnormal maternal glucose homeostasis (AMGH) at 4-12 weeks postpartum. Multivariate logistic regression models were built to test the association between GADT and the primary outcomes: adjustments for age, body mass index (BMI), family history of T2D, previous GD or macrosomia, insulin therapy, HbA1c, chronic hypertension, maternal excess weight gain during pregnancy, and time of GD diagnosis plus variables known to be associated with the primary outcome.

Results: We studied 6927 women with a median age of 34 (30-37) years and BMI of 25.8 (22.8-30.4) kg/m^2. Median GADT was 5 (2-11) mg/dL. HDP was found in 336 (4.9%) of women, PTL in 406 (5.9%), CS in 2704 (39.0%), neonatal hypoglycaemia in 262 (3.8%), LGA in 728 (10.5%), and AMGH in 486 (7.0%) – T2D in 56 (0.8%). In the univariate analysis, GADT, per 5mg/dL increase, was associated with HDP, CS, neonatal hypoglycaemia, LGA, and AMGH, but not PTL with an OR (95% CI) of 1.07 (1.00-1.14), p=0.04; 1.06 (1.03-1.09), p<0.001; 1.08 (1.01-1.16), p=0.03; 1.08 (1.03-1.13, p<0.001); 1.32 (1.27-1.38), p<0.001, and 1.03 (0.97-1.09), p=0.33. After multivariate adjustments, GADT, per 5mg/dL, remained associated with neonatal hypoglycaemia [1.09 (1.01-1.18), p=0.03], LGA [1.06 (1.00-1.11), p=0.03], and AMGH [1.31 (1.25-1.38), p<0.001] but not with HDP [1.04 (0.97-1.11), p=0.30] and CS [1.00 (1.00-1.01), p=0.21].

Conclusions: GADT is associated with worse neonatal outcomes and with AMGH but not with obstetric outcomes. Per 5mg/dL increase of GADT, there is a 9% higher risk of neonatal hypoglycaemia, 6% higher risk of LGA newborns and 31% higher risk of AGMH at postpartum reclassification.

Notes for Editors:

1. For further information about the study, and to arrange an interview with the authors, please contact the ECE 2024 press office:

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2. The study **"Glucose at gestational diabetes diagnosis predicts neonatal hypoglycaemia, large-for-gestational age and post-partum abnormal maternal glucose homeostasis"** will be presented at 14:50 CET on Sunday 12 May 2024 at the European Congress of Endocrinology at the Stockholm International Fairs (Stockholmsmässan) in Stockholm, Sweden.

1. The 26th European Congress of Endocrinology (ECE) is held at the Stockholm International Fairs (Stockholmsmässan) in Stockholm, Sweden, on 11-14 May 2024. See the full scientific programme here: https://ese-hormonesapps.m-anage.com/ece2024/en-GB/pag

2. The European Society of Endocrinology (ESE) is at the centre of Europe's endocrine community. Its vision is to shape the future of endocrinology to improve science, knowledge and health. Through its events, publications, grants and advocacy work, ESE shares the best knowledge in endocrine science and medicine across Europe and beyond. ESE and its partner societies jointly represent a community of over 20,000 endocrinologists. ESE informs policymakers on health decisions at the highest level through advocacy efforts across Europe.