Metformin as treatment of GDM

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Aim

To evaluate pregnancy outcomes based on different treatment modalities for gestational diabetes mellitus (GDM) with a focus on metformin.

Introduction

Metformin as treatment for GDM is controversial. Concerns about the effects on neonatal birth weight (mainly small for gestational age, SGA) have been raised.

Material and methods

Observational study based on real world data from a stepped wedge cluster randomized trial: Changing diagnostic criteria for GDM in Sweden – www.cdc4g.se.

The population was singleton pregnancies during 2018 from eight clusters (approximately 48% of all pregnancies in Sweden in 2018). Screening was based on risk factors and random plasma glucose measurements. Half of the population received a GDM diagnosis based on old Swedish thresholds and half based on new (WHO-2013) diagnostic criteria.

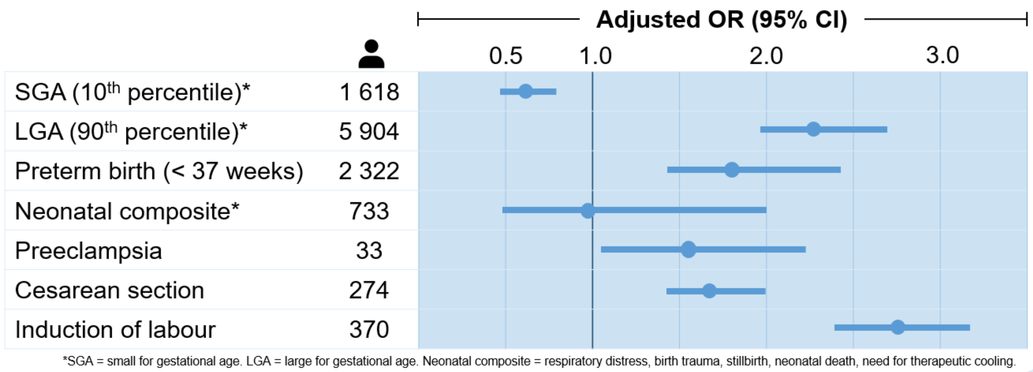
Pregnancy outcomes for women with metformin treated GDM, and other treatment modalities, were compared to the background population without diagnosed GDM.

Logistic regression analysis with adjustment for potential confounders (body mass index, age, smoking, parity, country of birth, chronic hypertensive disease and cluster) for all outcomes.

Results

Of the 54 678 pregnancies included, 2 169 (4.0%) were diagnosed with GDM; of whom 1 076 (49.6%) were treated with diet only, 668 (30.8%) with metformin only, 116 (5.3%) with insulin only, and 309 (14.2%) with both metformin and insulin. Pregnancy outcomes are shown in the figure and table below.

Pregnancy outcomes for metformin (with and without insulin) treated GDM compared to the background population without GDM diagnosis.



*SGA = small for gestational age. LGA = large for gestational age. Neonatal composite = respiratory distress, birth trauma, stillbirth, neonatal death, need for therapeutic cooling.

Pregnancy outcomes for different treatment modalities for GDM.

	Background, reference (n= 52 509) N (%)	Metformin GDM (n=668) aOR	Insulin GDM (n=116) aOR	Metformin & insulin GDM (n=309) aOR
SGA (10th percentile)*	5 886 (11.2)	**0.57 (0.41-0.79)**	0.48 (0.21-1.09)	0.78 (0.51-1.18)
LGA (90th percentile)*	5 904 (11.3)	**2.29 (1.88-2.78)**	**2.47 (1.58-3.86)**	**2.32 (1.76-3.07)**
Preterm birth (< 37 weeks)	2 322 (4.4)	**1.79 (1.30-2.47)**	1.36 (0.59-3.13)	**1.97 (1.26-3.08)**
Neonatal composite*	733 (1.4)	1.46 (0.72-2.98)	3.03 (0.94-9.73)	N/A
Preeclampsia	1 370 (2.6)	**1.60 (1.04-2.46)**	1.90 (0.69-4.24)	1.37 (0.70-2.70)
Cesarean section	9 402 (17.2)	**1.56 (1.29-1.88)**	1.10 (0.68-1.77)	**1.95 (1.51-2.52)**
Induction of labour	10 072 (19.2)	**2.64 (2.23-3.13)**	**4.78 (3.23-7.08)**	**2.93 (2.30-3.74)**

Statistically significant results written in bold.
*SGA = small for gestational age. LGA = large for gestational age. Neonatal composite = respiratory distress, birth trauma, stillbirth, neonatal death, need for therapeutic cooling.

Conclusion

These preliminary real world results show decreased risk for SGA when treating GDM with metformin compared to the background population without GDM diagnosis.

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