

Poster number: 4531678

First Trimester Uterine artery Doppler in pregnancies with reactive hypoglycaemia at oral glucose tolerance test: a retrospective study

Muhammad Pradhiki Mahindra^{1,2,3}, Muhammad Pradhika Mapindra^{1,2,3}, Adly Nanda Al Fattah², Raden A. Kusuma^{2,3}, Sara Hillman¹, Dimitrios Siassakos¹

- 1. University College London Elizabeth Garrett Anderson Institute for Women's Health, London, England, United Kingdom.
- 2. Rumah Sakit Anak dan Bunda Harapan Kita, West Jakarta, Jakarta, Indonesia.
- 3. Indonesian Prenatal Institute, Jakarta, Indonesia

Introduction

- Reactive hypoglycaemia is a condition of low blood glucose following an oral glucose tolerance test (OGTT)
- Reactive hypoglycaemia is reported to be associated with low birth weight and small for gestational age newborns, as well as some outcomes related to diabetes such as polyhydramnios.
- This study aims to investigate the perinatal outcomes associated with placental dysfunction and first-trimester uterine artery resistance in pregnancies with reactive hypoglycemia at OGTT in the Indonesian population.

Methods

- OGTT records performed after 24 gestational weeks between 2021 and 2023 in maternity units in Indonesia were collected.
- Gestational diabetes mellitus (GDM) was diagnosed according to NICE criteria.
- RH was defined as a 2-hour OGTT value ≤ fasting value
- First trimester screening variables recorded were:
 - Mean arterial pressure (MAP) = diastolic pressure + 1/3(systolic pressure – diastolic pressure),
 - Uterine artery Doppler (UtA-PI): left UtA-PI, right UtA-PI, mean UtA-PI (left UtA-PI + right UtA-PI/ 2), and multiple of median (MoM) of UtA-PI (mean UtA-PI/ 1.76).
 - High mean UtA-PI was defined as mean UtA-PI > 2.35, relevant to the 95th percentile

Results

- Of 343 pregnancies, 26 (7.58%) had RH whilst GDM was diagnosed in 70 (20.41%).
- Compared to women with normal glucose tolerance (NGT), women in the GRH group were slimmer, had higher fasting glucose, and higher incidence of high first trimester mean UtA-PI (34.62% vs 4.45%), low birthweight (15.38% vs 4.05%), neonatal intensive care unit (NICU) admission (11.54% vs 3.24%), and preterm birth (11.54% vs 1.62%).
- The GDM cohort had higher fasting glucose than either RH or NGT; and a higher incidence of NICU admission (7.14% vs 3.24%) and preterm birth (8.57% vs 1.62%) than NGT, but not as high as women with RH.

Conclusion

- RH may be another clinical presentation of glucose dysmetabolism in pregnancy with a higher frequency of low birthweight babies. The increased first-trimester uterine artery resistance in RH implies the adverse outcomes may be placenta-driven.

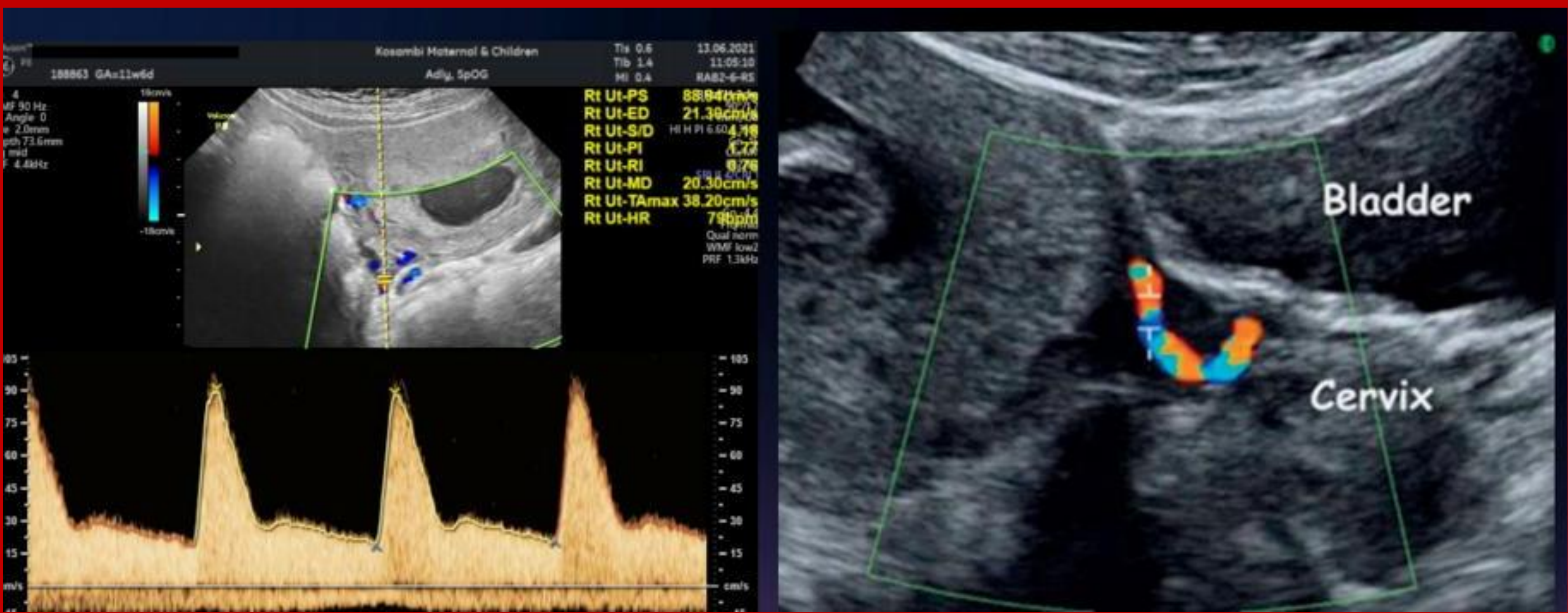


Figure 1. Uterine artery Doppler sampling. A parasagittal view of the cervix and uterus was obtained, and color Doppler identified the uterine arteries as they crossed the external iliac vessels.

Variables	Normal glucose tolerance (N=247)	GRH (N = 26)	GDM (N=70)
1st-trimester fMAP	75.68 ± 24.62	88.68 ± 1.96 a, b	73.78 ± 29.62
Left UtA-PI*	1.62 ± 0.50	2.20 ± 0.66 a, b	1.59 ± 0.46
Right UtA-PI*	1.61 ± 0.44	2.16 ± 0.44 a, b	1.53 ± 0.46
Mean UtA-PI*	1.60 ± 0.42	2.20 ± 0.50 a, b	1.60± 0.43
MoM UtA-PI*	0.91 ± 0.25	1.25 ± 0.29 a, b	0.89 ± 0.27

Table 1. First-trimester uterine artery Doppler of pregnancy cohorts. Data is presented as mean ± standard deviation or number (%). Asterisks symbol (*) indicate a significant difference (p-value < 0.05) between groups.

Variables	Normal glucose tolerance (N=247)	GRH (N = 26)	GDM (N=70)
Caesarean delivery	95 (38.46)	8 (30.77)*	37 (52.86)*
Antepartum stillbirth	2 (0.81)	1 (3.85)	0
Oligohydramnios	10 (4.05)	4 (15.38)	5 (7.14)
Polyhydramnios	1 (0.40)	0	1 (1.43)
LBW	12 (4.85)	4 (15.38)*	4 (5.71)
SGA	11 (44.53)	5 (19.23)*	0
NICU admission	8 (3.24)	3 (11.54)*	5 (7.14)*
PPROM	33 (13.36)	6 (23.08)	13 (18.57)
Preterm labor	4 (1.62)	3 (11.54)*	6 (8.57) *
Preeclampsia	12 (4.86)	1 (3.85)	5 (7.14)

Table 2. Pregnancy and delivery outcomes in GRH and GDM compared to NGT. Data is presented as mean ± standard deviation or number (%). Asterisk symbols (*) indicate a significant difference (p-value < 0.05) between study groups (GDM/ GRH) and control