

Uterine artery doppler examination in pregnancies with GDM and pregnancies with GDM and preeclampsia, in the 1st trimester and throughout pregnancy

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Objective

Aim of the present study is to investigate the differences in the uterine artery (UtA) dopplers between uncomplicated pregnancies, pregnancies with gestational diabetes mellitus (GDM) and pregnancies with GDM and preeclampsia (PE) in the first trimester and to investigate their trajectories throughout pregnancy.

Methods

This was a prospective study that included pregnant women who presented in our clinic for in their first-trimester, second and third trimester scans as part of the routine obstetrical care in Greece. In all scans the uterine artery pulsatility index was determined and was transformed into the multiples of median (MoMs) for the first trimester and into percentiles for all the trimesters. All pregnant women underwent a 75gr two-hour Oral Glucose Tolerance Test at 24-28 weeks of gestation and diabetes was diagnosed by the IADPSG criteria. The diagnosis of preeclampsia was established in the presence of new onset hypertension (systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg) and proteinuria (300mg/24 hours) or new onset hypertension and significant end-organ dysfunction with or without proteinuria after 20 weeks of gestation or postpartum in a previously normotensive patient. Women with preexisting diabetes mellitus, chronic hypertension or twin pregnancies were excluded from the study.

Results

7010 women were included in the study. 5356 women had uncomplicated pregnancies, 1249 developed GDM and 405 developed GDM and preeclampsia. In the first trimester, the average MoM of UtA doppler was 1.17 ± 0.31 in uncomplicated pregnancies, 1.15 ± 0.31 in GDM pregnancies and 1.18 ± 0.33 in GDM and PE pregnancies. The difference between uncomplicated and GDM pregnancies was significant $p=0.025$. The correlation between UtA percentiles and gestational age was -0.086 in the uncomplicated pregnancies, -0.024 in the GDM pregnancies and 0.036 in the GDM and PE pregnancies. Differences in correlations between three groups were significant.

Conclusion

In the first trimester, GDM pregnancies show decreased UtA PI MoMs compared to uncomplicated pregnancies and pregnancies with GDM and PE. UtA PI percentiles follow different trajectories throughout pregnancy in uncomplicated pregnancies, pregnancies with GDM and pregnancies with GDM and PE.