

**Effect of Poor Glycemic Control on Arterial Stiffness in Pregnancy**

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**Objectives:** Poor glycemic control during pregnancy is associated with increased adverse perinatal outcomes. Our objective was to characterize the association between glycemic control and arterial stiffness in pregnancy.

**Methods:** In this prospective longitudinal study, women with high-risk singleton pregnancies were recruited from obstetrical clinics in Montreal, Canada. Arterial stiffness was measured in women with gestational diabetes (GDM) or pre-existing diabetes mellitus (DM) using applanation tonometry (SphygmoCor; AtCor) starting at 24 weeks' gestation (the period at which GDM screening is performed for all women according to standard clinical practice) and every 4 weeks thereafter until delivery. Arterial stiffness indices were compared between women with poor glycemic control and women with adequate glycemic control. Poor glycemic control was defined as average HbA1C > 7%, average fasting glucose > 5.3 mmol/L, average 1h post-prandial glucose > 7.8 mmol/L, insulin dosage > 30 units, large for gestational age fetus, or maximal vertical pocket > 8 cm.

**Results:** Of the 35 women who delivered in this ongoing study and had GDM (n=18) or DM (n=17), 12 had poor glycemic control throughout their pregnancy. Longitudinal analyses adjusted for maternal age, body mass index, and medical history, showed women with poor glycemic control had significantly increased carotid-radial pulse wave velocity (PWV) at each timepoint: 26-30 weeks: 8.4 vs. 8.0 m/s, p = 0.04; 30-34 weeks: 8.4 vs. 8.1 m/s, p <0.01; 34-38 weeks: 8.5 vs. 8.1 m/s, p = 0.02. No differences were found in carotid-femoral PWV, augmentation index adjusted for a heart rate of 75 beats per minute, or start time of wave reflection between these 2 cohorts.

**Conclusion:** Women who had poor glycemic control throughout pregnancy showed increased peripheral arterial stiffness from the late 2<sup>nd</sup> trimester until delivery. Our ongoing study will provide more definite conclusions with increased population size.