Objectives: To evaluate the association between the mean pulsatility index (PI) of uterine arteries, placental volume, maternal weight, blood pressure, maternal blood glucose at week 12 and birth weight.

Methods: A cohort study including 121 pregnant / fetuses / newborns. The pregnant women were evaluated at the 12th week and in the immediate postpartum period. Ultrasonography was performed at week 12 (Samsung WS80 Elite device), weight and blood pressure were also measured, as well as fasting glucose. An analysis of variance was performed to determine the association between the mean PI of the uterine arteries, placental volume, maternal weight, blood pressure and maternal blood glucose at week 12 and the adequacy of birth weight. Multiple regression analysis was performed too. The significance level of 5% was considered. The project was approved by the Ethics Committee.

Results: The mean blood glucose was 68.4 ± 9.3mg% (ranging from 43 to 96) and there was no association with birth weight (p = 0.12). The mean placental volume was 67.0 ± 24.3 (ranging from 18.5 to 203.1) without association with birth weight (p = 0.31). Mean maternal weight was 57.5 ± 10.55 (ranging from 38.3 and 84.4), without association with birth weight (p = 0.15). The median systolic and diastolic blood pressure were 104 ± 10.0 and 66 ± 10.4, and there was no association with birth weight (p = 0.83 and 0.98). The mean PI mean was 2.40 ± 0.78 (0.57 to 5.24) and this was associated with birth weight, p <0.001, with a mean PI of 2.29 ± 0.64 in the newborn with adequate weight and 4.22 in the small for gestational age. After multiple regression analysis, maternal glycemia (positive association) and PI of the uterine arteries (negative association) remained associated with birth weight.

Conclusions: Adequate birth weight was influenced by uterine artery IP (higher PI, lower birth weight) and glycemia (higher blood glucose greater birth weight) evaluated at week 12.