Introduction

Umbilical venous blood flow represents the single most important physiological parameter linking placental function to fetal growth (1).

Objective

The objective of the study was to evaluate umbilical vein blood flow volume (QUmbV) in fetuses with inappropriate for gestational age growth, but with normal Doppler indices.

Methods

This is a case control study (1:2) of fetuses with fetal abdominal circumference (AC)<10° or reduced growth velocity (AC drop>50°). Doppler of uterine, umbilical, and middle cerebral arteries and cerebro-placental ratio was performed. Controls were uncomplicated pregnancies with normal fetal growth. QUmbV was evaluated on a free umbilical cord loop and normalized for estimated fetal weight (EFW). Adverse perinatal outcome was defined as presence of pathological cardiotocography (CTG) or neonatal arterial cord blood pH<7.10 or base excess >-12 or admission to neonatal care unit. Analysis was performed at last evaluation before delivery by logistic regression.

Results

The analysis included 106 cases and 178 controls. The adverse perinatal outcome, intervention for pathological CTG and emergency caesarean section were more frequent in fetuses with inappropriate growth than controls (13% vs 50%, p=0.0001; 8.9% vs 19.8%, p=0.01; 7.3% vs 25.5%, p<0.0001).

Conclusion

A lower umbilical vein blood flow might reflect an imbalance between placental blood supply and fetal metabolic demands and, thus, might identify fetuses at risk of adverse perinatal outcome, even in the presence of normal Doppler indices commonly assessed.

References