

Umbilical artery and middle cerebral artery Doppler to predict unfavorable outcome in a cohort of severe IUGR

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Objective

To study the impact of umbilical artery (UA) and middle cerebral artery (MCA) Doppler to predict adverse outcome in a cohort of fetuses with severe intrauterine growth restriction (IUGR)..

Methods

Retrospective cohort study from 2000 to 2010 including all singleton pregnancies with a prenatal diagnosis of IUGR (estimated fetal weight <10ep) related to placental insufficiency (both abnormal uterine arteries), delivered in a tertiary hospital in Montreal, Canada.

Exclusion criteria were UA absent or reversed end-diastolic flow. An abnormal UA Doppler assessment was defined as a pulsatility index (PI) above the 95th centile, whereas MCA abnormalities were defined as a PI less than the 5th centile. When serial Doppler examinations were performed, results of last Doppler study were considered to classify pregnancies into groups. Occurrence of preeclampsia, HELLP syndrome or eclampsia was recorded. Birth weight percentile was computed according to neonatal Canadian charts.

Adverse perinatal outcome was defined as a composite outcome of umbilical artery pH<7.1, grade 3-4 intraventricular hemorrhage, periventricular leukomalacia, necrotizing enterocolitis, bronchopulmonary dysplasia, sepsis, and death.

Results

103 fetuses with IUGR were included. Distribution of normal/abnormal UA and MCA was as followed: both normal 44 (43%), isolated abnormal MCA 22 (21%), isolated abnormal UA 12 (12%) and both abnormal 25(24%).

Patients were mostly Caucasian (80%) with a median age of 30 years [25-35]. Preeclampsia occurred in 74%, HELLP syndrome in 11% and eclampsia in 2%. Median gestational age at delivery was 34 weeks [31.7-35.6], birthweight was 1400g [1135-1750] and birth percentile was 4th [1st-7th].

No difference in gestational age at delivery, birthweight, birth percentile or adverse perinatal outcome was observed when comparing normal/abnormal groups of UA or MCA (Figure 1 and 2).

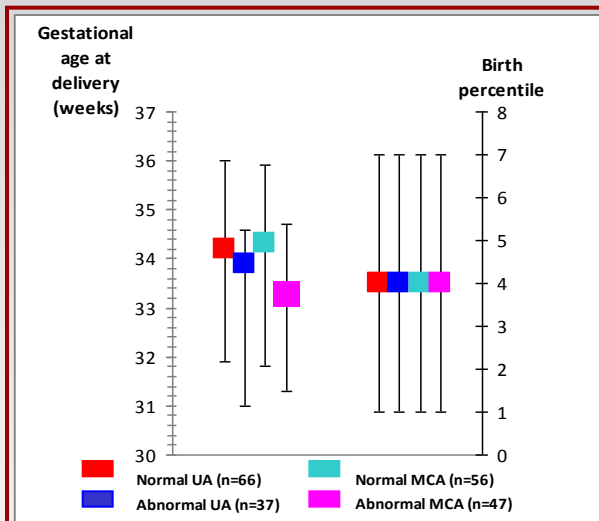


Figure 1: Gestational age at delivery and birth percentile according to Doppler group.

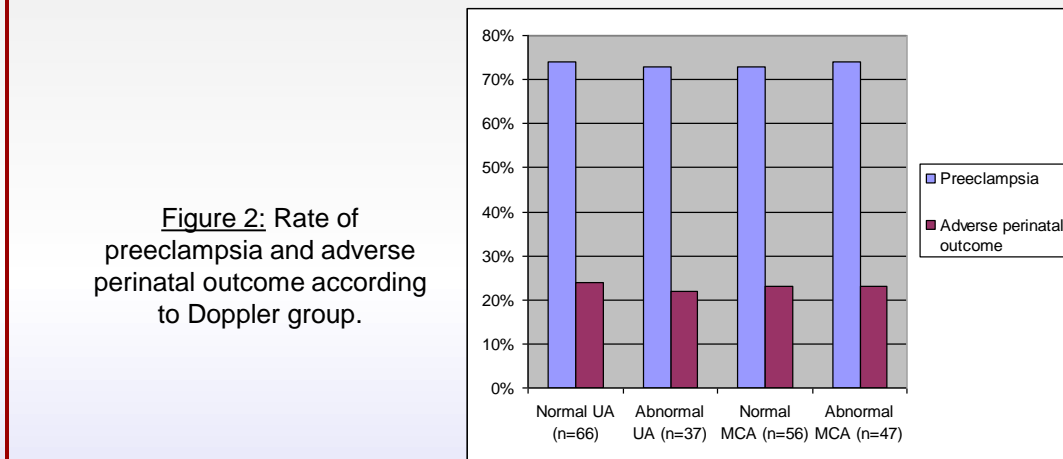


Figure 2: Rate of preeclampsia and adverse perinatal outcome according to Doppler group.

Conclusion

In a cohort of severe IUGR with a high rate of preeclampsia and non-critical Doppler, umbilical artery and middle cerebral artery Doppler did not predict the risk of adverse perinatal outcome