

## Discordance in fetal biometry and Doppler are independent predictors of perinatal loss in twin pregnancies

Khalil A, Khan N, Bowe S, Familiari A, Papageorgiou A, Bhide A, Thilaganathan B  
St Georges' Hospital, London, United Kingdom

### Objective

Impaired fetal growth might be better evaluated in twin pregnancies by assessing the inter-twin discordance rather than the individual fetal size. The main aim of this study was to investigate the prediction of perinatal loss in twin pregnancy using discordance in fetal biometry and Doppler.

### Methods

This was a retrospective cohort study in a single tertiary referral centre. The estimated fetal weight (EFW), umbilical artery (UA) pulsatility index (PI), middle cerebral artery (MCA) PI, cerebroplacental ratio (CPR) and their discordance recorded at the last ultrasound assessment before delivery or demise of one or both fetuses. Indices were converted into centiles or multiples of the median (MoM), and the main outcome was perinatal loss. The EFW discordance (EFWD) was calculated as (larger EFW-smaller EFW)/larger EFW. The CPR discordance (CPRD) was calculated as (higher CPR-lower CPR)/higher CPR. Logistic regression analysis was performed to identify, and adjust for, potential confounders. The predictive accuracy was assessed using ROC curve analysis.

### Results

The analysis included 620 (464 dichorionic diamniotic and 156 monochorionic diamniotic) twin pregnancies (1240 fetuses). Perinatal loss of one or both fetuses complicated 16 (2.6%) pregnancies. The combination of EFW discordance and CPR discordance had the best predictive performance (AUC: 0.96, 95% CI 0.92-1.00) for perinatal mortality. The detection rate, false positive rate, positive likelihood ratio (LR) and negative LR were 87.5%, 6.7%, 13.08 and 0.13, respectively. The EFW centile, EFW below the 10th centile (small for gestational age), UA PI discordance, MCA PI discordance and MCA PI MoM were significantly associated with the risk of perinatal loss on univariate analysis, but these associations became non-significant after adjusting for other confounders ( $p=0.097$ ,  $p=0.090$ ,  $p=0.687$ ,  $p=0.360$  and  $p=0.074$ , respectively). The UA PI MoM, CPR MoM, EFW discordance and CPR discordance were all independent predictors of the risk of perinatal loss, even after adjusting for potential confounders ( $p=0.022$ ,  $p=0.002$ ,  $p<0.001$  and  $p=0.010$ , respectively).

### Conclusion

EFW discordance and CPR discordance are independent predictors of the risk of perinatal loss in twin pregnancies. Their combination could identify the majority of twin pregnancies at risk of perinatal loss. These findings highlight the importance of discordance in Doppler indices of fetal hypoxia, as well as fetal size, in assessing the risk of perinatal mortality.