



The value of middle cerebral artery and umbilical doppler indices in assessment of fetal wellbeing & prediction of neonatal outcome in IUGR and PE

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Objective

To explore the value of middle cerebral artery and umbilical artery Doppler in the assessment of fetal wellbeing and to predict neonatal outcome of pregnancies complicated by IUGR and preeclampsia.

Methods

One hundred and twenty one (121) pregnant women were categorized into 4 groups; Group A: Pre-eclampsia without IUGR group (38 cases); Group B: IUGR without pre-eclampsia group (24 cases); Group C: Pre-eclampsia complicated with IUGR group (19 cases); Group D: Control group (40 cases). The perinatal outcomes correlated to the results of UA and MCA Doppler Indices, and CPR. The accuracy of UA and MCA Doppler Indices and CPR in the prediction of adverse outcome were calculated.

Results

Adverse neonatal outcome in group A was significantly correlated to UA-RI and UA-PI ($r = 0.537$, $P\text{-value} < 0.001$, and $r = 0.405$, $P = 0.0116$, respectively). However it showed no significant correlation with other parameter of Doppler indices and CPR. In group B, it was significantly correlated to all Doppler parameters indices and CPR. UA-RI and CPR were stronger parameters, to predict adverse neonatal outcome, than other parameters, with $r\text{-value} = 0.869$ and 0.803 respectively. In group C, it was significantly correlated to UA-RI and UA-PI, MCA-RI, and CPR. However it showed no significant correlation with MCA-PSV. CPR and UA-RI were stronger parameters, to predict adverse neonatal outcome, than other parameters, with $r\text{-value} = 0.677$ and 0.631 respectively. In group D, it was significantly correlated to UA-RI, UA-PI and CPR. However it showed no significant correlation with other parameter of Doppler indices. UA-RI and UA-PI were stronger parameter, to predict adverse neonatal outcome, than CPR, with $r\text{-value} = 0.789$ and 0.787 respectively.

Conclusion

From our study we could conclude that MCA and UA Doppler indices are good utilities for the assessment of fetal wellbeing and prediction of neonatal outcome in pregnant women with IUGR and in pregnant women with pre-eclampsia. CPR is a good parameter. Abnormal UA wave pattern can predict an adverse neonatal outcome. Measuring MCA-PSV in IUGR fetuses may predict the adverse neonatal outcome and need further studies.