Comparison of Umbilical artery Doppler Velocimetry with Biophysical profile in monitoring high risk pregnancies

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Context- Fetal surveillance in growth restricted fetuses.

Objectives:
1. To compare Doppler velocimetry with Biophysical profile for fetal monitoring in high risk pregnancies
2. To investigate whether serial Doppler velocimetry measurements can replace BPP for antepartum fetal surveillance.

Method
Prospective observational study carried out in a tertiary hospital in India.
Group I : 200 high risk pregnancies.
Group II : 100 high risk pregnancies with Bio-physical profile <= 6/10.
Fetuses with congenital anomalies, fetal infection, abnormal fetal karyotype were excluded.
Fetal monitoring was done with weekly or more frequently if required Biophysical profile and Doppler velocimetry of the fetal umbilical artery. The result of the last Doppler and BPP examination within 7 days of delivery was correlated with perinatal outcome.
Decision for expediting delivery was taken in case BPP <= 6/10, AEDF or REDF in umbilical artery, non-reassuring fetal heart rate or on the discretion of the attending physician.

Results
The sensitivity of Doppler and BPP was 96.15% and 92.31% respectively, the specificity was 68 %and 42 %, positive predictive value 89.9 and 81% , and negative predictive values were 86.6 and 66.6% respectively. The Colour Doppler was abnormal before evidence of BPP abnormality by several days to weeks.

Conclusion:
In busy hospitals, the Colour Doppler measurement of umbilical vessel can be used to screen fetuses of high risk pregnancies for hypoxia, instead of the 30 minute long bio-physical profile. Those with abnormal dopplers only may have full BPP.