



Obstetrics & Gynaecology

DOPPLER STUDY OF UMBILICAL ARTERY AND MIDDLE CEREBRAL ARTERY IN BIOMETRICALLY DETECTED INTRAUTERINE GROWTH RESTRICTED PREGNANCY

Dr Mohit Laxmikant Marda*	Senior Resident In Department Of Obstetrics and Gynaecology ; Dr BVP Rural Medical College; Loni *Corresponding Author
Dr Shweta Dewani	Senior Resident In Department Of Obstetrics and Gynaecology ; Dr BVP Rural Medical College; Loni
Dr Ajit Deshpande	Professor In Department Of Obstetrics and Gynaecology ; Dr BVP Rural Medical College; Loni
Dr V B Bangal	Professor & HOD In Department Of Obstetrics and Gynaecology ; Dr BVP Rural Medical College; Loni

KEYWORDS :

PURPOSE

The condition intrauterine growth restriction (IUGR) is implied to those fetuses who do not achieve their genetically determined potential size. IUGR being a major complication of pregnancy may result in significant morbidity and mortality, hence timely diagnosis is of utmost importance. The widely accepted definition of IUGR is a fetus whose estimated foetal weight is below the 10th percentile for its gestational age.

Growth of the foetus is multifactorial depending upon the mother, the foetus and the placenta. Disturbance in any of these determinants results in IUGR.

Accurate and timely diagnosis of IUGR is the pivotal role fulfilled by modern day sophisticated Real time ultrasound equipment, reducing the devastating perinatal complications.

After biometric parameters have been assessed Doppler imaging is taken into account for monitoring the high risk pregnancies/ fetuses diagnosed with IUGR on grey scale findings.

With the advent of Doppler ultrasound, assessment of uteroplacental and fetoplacental circulations of high risk pregnancies can be monitored.

Doppler techniques give us various flow velocity waveforms of the vessels that contribute to fetoplacental and uteroplacental circulations. Various parameters such as pulsatility index (PI), resistivity index (RI) and systolic to diastolic (S/D) ratios can be assessed.

AIMS AND OBJECTIVES

Doppler study of Middle Cerebral Artery (MCA) and Umbilical Artery (UA) in biometrically detected Intra Uterine Growth Restricted (IUGR) pregnancies.

1. To identify early high risk fetuses by changes in Doppler flow velocity waveform in middle cerebral artery and umbilical artery.
2. To evaluate the usefulness of Doppler indices in predicting the adverse perinatal outcome in biometrically suspected IUGR pregnancies using umbilical artery and middle cerebral artery indices.

MATERIAL AND METHODS

A Descriptive cross sectional study will be carried out in the Department of Obstetrics and Gynecology of Rural Medical College, Loni. 100 antenatal women, of 28th -40th week pregnancy with biometrically detected singleton intrauterine growth restricted pregnancy were included in this Doppler study in the Department of Obstetrics and Gynecology of Pravara Rural Hospital (PRH), Loni. Women who will be not willing to participate in the study, multiple pregnancy or pregnancy with congenital anomalies will be excluded. The study was conducted over two years from October 2019 to September 2021.

All the patients included were singleton pregnancies suspicious for

IUGR underwent for obstetrics Doppler ultrasound and these patients will be followed up to their clinical outcome.

RESULTS

A descriptive study of 100 antenatal patients was done after considering inclusion and exclusion criteria. Flow velocity waveforms of umbilical and middle cerebral arteries were obtained from all the 100 cases and were analysed.

(39 cases), IUGR (61 cases). Age of the patients ranged from 19 to 30yrs with a mean age of 24.22yrs (S.D 3.7yrs). Of them 56% were primigravida and 44% were multigravida. Gestational age of the patients ranged between 28-40 weeks. Maximum number of patients (45%) belonged to 31-35 weeks group. All patients were subjected to Doppler waveform analysis of Umbilical and MCA and all the indices were noted.

Umbilical artery Doppler studies revealed that mean S/D Ratio 4.05, mean RI 0.8 and mean PI 1.35.

Out of 100, 13 cases had AEDF and 5 had REDF. Perinatal mortality was worst amongst the both groups AEDF & REDF wherein all delivered fetuses were stillborn.

MCA Doppler studies revealed that when there was an increase in the umbilical artery resistance there was a decrease in the values of MCA indices showing a brain sparing effect. There were increased MCA S/D ratio. Amongst the MCA indices perinatal mortality was highest for abnormal PI when compared to abnormal RI and abnormal S/D.

Out of 100 cases, 42 cases delivered vaginally out of which 28 cases were preterm vaginal delivery. Caesarean sections were performed in 58 cases.

In our study group of 100 antenatal women, 44 neonates born to women required NICU admission for LBW and 56 neonates were healthy.

There were 54 LBW (SGA) neonates who required NICU care, 14 still births due to low APGAR, and 32 born with healthy.

Out of these 54 LBW neonates, 51 neonates had CPR <1.08(54.3%) and 3 had CPR >1(50%).

In all the fetuses with a brain sparing effect the CPR was <1.08(54 cases).

Overall highest CPR had the highest sensitivity (97.02%) and MCA PI had the highest specificity (87%).

CONCLUSION

PI ratio of MCA/Umb A is the most sensitive index in predicting perinatal outcome (97.02%). MCA pulsatility index is the most

specific index (87%).

The sensitivity of the Doppler studies can be significantly increased by studying multiple vessels. Hence we conclude that Doppler studies of multiple vessels the uteroplacental and fetoplacental circulation can help in monitoring of compromised fetus and can help us predicting neonatal morbidity. This may be helpful in determining the optimal time of delivery in complicated pregnancies.

Doppler imaging is of value for monitoring the pregnancy because it can provide indirect evidence of fetal compromise and is known to improve outcomes of high risk pregnancies with Intrauterine growth restriction. Hence Doppler evaluation is complementary to all other surveillance modalities