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Predication of intrauterine growth retardation by second trimester umbilical artery doppler abnormalities

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Objective: To determine the utility of color doppler sonography of the fetoplacental circulation in predicting the outcome in early pregnancies. To examine the diagnostic value of umbilical artery velocity waveforms for the early detection of IUGR

Design: Prospective study.

Method: 114 subjects were included in this study. This study was conducted in the Department of Obs & Gynae, SSMC & Mitford Hospital in Collaboration with the radiology and imaging department of Dhaka Hospital, Mitford in 2008.

Result: A total of 114 subjects of 16 to 22 weeks of gestation were included in this series. The mean age of the respondents was 23.74 years with a standard deviation of ± 4.15 years. All patients were within 17 to 35 years age range. 19.3% respondents were nullipara, 36.8% were primipara and 43.9% were multipara. The weight of intrauterine growth retarded baby and the normal baby was 2.34 ± 0.75 and 3.01 ± 0.42 kg respectively ($p < 0.05$). Negative correlations were observed between birth weight and S/D ratio ($r = -0.336, p < 0.001$) and birth weight

and RI index ($r = -0.242, p < 0.001$). Sensitivity of Doppler USG to diagnose IUGR was 77.8%, specificity 96.2%, positive predictive value 63.6%, negative predictive value 98.1% and accuracy 94.7% at S/D cutoff level 5. Sensitivity, specificity, positive predictive value, negative predictive value, accuracy was found 44.4%, 100.0%, 100.0%, 95.5%, and 95.6% respectively at 5.5 cutoff level. Diagnostic accuracy was determined as receiver operating characteristic (ROC) curve, suggesting that the area under the curve (AUC) of Doppler USG at S/D cutoff level 5 and 5.5 was 0.87 and 0.72, respectively. So S/D cut off level 5 was more appropriate to predict IUGR.

Conclusion: A close linear relationship between birth weight and umbilical artery doppler velocity waveforms was observed. As umbilical artery doppler is easy to perform and it is done in between 16 to 22 weeks of gestation can be done along with anomaly scan which is also done at 20-22 week of gestation. So, UA doppler does not cause an additional USG scan. Along with an anomaly scan, UA doppler will help to screen out high-risk pregnancy, who are going to develop IUGR.

Biography

Pratima Rani Biswas has completed his MBBS at the age of 25 years from Sir Salimullah Medical College under Dhaka University and postgraduate, MS (Gynae & Obs) from Sir Salimullah Medical College under Dhaka University, Bangladesh. She is the junior consultant (gynae & obs) at Railway General Hospital Dhaka, Bangladesh. She has published more than 03 papers in reputed journals.

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