The comparison of Doppler ultrasonographic findings in the myometrial blood vessels between pregnancies with normal and IUGR fetuses

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Background

Intrauterine growth restriction (IUGR) refers to a condition in which a fetus is smaller than it expected to be because of problem(s) in intrauterine growth. Various etiologies have been acknowledged in association with IUGR, including maternal and fetal causes. One of the mostly backed theories refers to pathologies in the uteroplacental circulation. On this basis, increased resistance in this circulatory system may finally end up with pathologies including IUGR. Doppler ultrasound, on the other hand, is known as an accurate and safe modality to detect such abnormalities. This study aims to examine the utility this technique in evaluating myometrial arteries in relation with IUGR.

Methods & Materials

In this case-control study 52 patients with IUGR and 52 normal pregnancies during 25-40 gestational weeks were recruited from a teaching center. Doppler indices of the myometrial arteries including the pulsatility index (PI), resistive index (RI), maximum velocity (Vmax),mean Velocity(Vmean) and S/D, as well as umbilical artery PI and uterine artery RI were obtained and compared between the two groups.

Results

The two groups were comparable in terms of maternal age, gravidity, body mass index and gestational age at the time of Doppler study. The only significantly different Doppler variables between the two groups were PI and Vmax of the myometrial arteries, which were significantly higher and lower in the IUGR group as compared with the controls, respectively (0.79 vs. 0.66, p=0.04 and 39.13 vs.

76.25, p<0.001). Vmax<52 predicted the occurrence of IUGR with a sensitivity and specificity of 94% and 92%, respectively.

Conclusion

Doppler indices of the myometrial arteries including PI and Vmax in 25-40 gestations' weeks might be helpful in predicting the development of IUGR. Vmax, in particular, is a highly sensitive and specific predictor in this regard.

Keywords: *Doppler Ultrasound, Myometrial Artery, IUGR*