



Comparison of first and second trimester uterine artery Doppler in predicting preclampsia and low birth weight

Dhengle S, Spoorthi, Sahana R, Acharya V, Radhakrishnan P
Bangalore Fetal Medicine Centre, Bangalore, India

Objective

To compare the effectiveness of the first (11+0 – 13+6w) trimester and the second trimester (18+0 – 23+6 w) scans in prediction of developing maternal preeclampsia (PE) and fetal Low Birth Weight below 5th centile for the gestational age.

Methods

7759 & 7392 pregnancies were assessed in the first and second trimesters respectively by uterine artery Doppler as a screening test for development of maternal preclampsia (PE) and low birth weight (LBW) as per the unit protocol. Pregnancies with fetal anomalies and twins were excluded. Gestational age specific Uterine artery PI normograms developed for our population were used in both trimesters and a mean PI > 95th centile for the gestation was considered as “screen positive”. All scans were performed by FMF certified operators according to the FMF protocol. The scans were performed between January 2008 – December 2016. Outcomes included development of maternal PE before 37 weeks and LBW for the gestation according to the Indian newborn weight chart.

Results

Out of 7759 pregnancies that had uterine artery Doppler assessment done in the 1st trimester, 30 (0.4%), 37 (0.5%) developed PE before 34 & 37 weeks and 79 (1%) babies had a LBW for the gestation. 366 (4.7%) women were “screen positive” of whom, 3 (0.8%), 3 (0.8%) and 13 (3.6%) had PE < 34w, PE < 37w and LBW babies, respectively. 347 (94.8%) “screen positive” women had a normal pregnancy outcome. 7392 women were screened in the 2nd trimester with the uterine artery Doppler, of whom 352 (4.8%) were “screen positive”. Of these, 14 (4%), 6 (1.7%) and 55 (15.6%) had PE < 34w, PE < 37w and LBW babies, respectively. 280 (79.5%) “screen positive” women had a normal pregnancy outcome.

Conclusion

Our study shows that the second trimester UAD has a better sensitivity than the first trimester UAD in prediction of PE and LBW, albeit both have low sensitivities. A normal UAD in both trimesters has a high specificity and therefore reassuring. Interventions are known to work better when introduced in the first trimester. However to consider intervention based on first trimester UAD alone will lead to unnecessary interventions and further combinations with biochemical and biophysical markers must be considered.