



Prediction of preeclampsia and small for gestational age by uterine artery pulsatility index at 11-13 weeks in twin and singleton pregnancies

Khanna S, Robert K, Radhakrishnan P
Bangalore Fetal Medicine Centre, Bangalore, India

Objective

To compare the median of the mean pulsatility index of the uterine artery Doppler (UtPI) obtained at 11+0-13+6 weeks in singleton and twin pregnancies and to evaluate its effectiveness in the prediction of preeclampsia (PE) and small for gestational age (SGA) affecting one or both babies.

Methods

During the study period, from January 2010 to July 2017, UtPI was measured in 10,756 singleton and 411 twin pregnancies (309 dichorionic, 102 monochorionic) at 11+0-13+6 weeks. All scans were performed by the Fetal Medicine Foundation (FMF) operators certified for the risk calculation for PE. The medians for the mean pulsatility index (PI) in singletons & twin pregnancies were calculated. This was then analysed to predict the development of maternal PE and SGA in the fetus(es) in singleton and twin pregnancies. The results were further analysed based on the chorionicity for the development of PE and SGA in one or both the fetuses in the twin pregnancies. Maternal PE requiring delivery before 32 weeks was seen in 41/10,756 (0.4%) singletons and 21/411 (5.1%) twin pregnancies. SGA of one/both babies was present in 64/10,756 (0.6%) singletons and 259/411 (63%) twin pregnancies.

Results

The median of the mean UtPI was significantly lower in twin pregnancies as compared to that of the singleton pregnancies (1.40 vs 1.65). In addition, the median in dichorionic twins was lower than that in monochorionic twins (1.35 vs 1.5). The median UtPI in the twin pregnancies which developed maternal PE and SGA in one or both the twins was significantly lower than that in singleton pregnancies (1.92 vs 2.36 for maternal PE; 1.48 vs 2.05 for SGA). The median UA PI in those twin pregnancies without any associated complications was significantly lower than that of singleton pregnancies (1.29 vs 1.63).

Conclusion

Placental impedance to blood flow, as assessed by the uterine artery Doppler examination at 11+0-13+6 weeks is reduced in twins in comparison to singleton pregnancies with little difference related to the chorionicity, being lower in dichorionic twins. The median of mean UtPI in twin pregnancies that develop maternal PE or SGA of one/both of the babies tends to be significantly lower than those who develop the same complications in singleton pregnancies. Hence, in twin pregnancies, there is a need to lower the threshold of the mean UA PI, to consider therapeutic interventions for maternal PE and SGA babies.