Quality assessment uterine artery Doppler in the first trimester screening for preeclampsia: Australian experience

Rolnik DL, McLennan A, Sahota D, Hyett J, da Silva Costa F
Sydney Ultrasound for Women, Sydney, Australia

Objective
To assess quality of measurements of mean uterine artery pulsatility index in first trimester screening for preeclampsia.

Methods
Consecutive patients attending first trimester screening for aneuploidies in a large practice in Sydney, Australia, from May 2014 to February 2017 also had combined screening for preeclampsia based on the Fetal Medicine Foundation (FMF) algorithm, combining maternal factors, mean arterial pressure (MAP), mean uterine arteries pulsatility index (UtPI), pregnancy associated plasma protein-A (PAPP-A) and placental growth factor (PlGF). Overall and each operator distributions of UtPI, expressed as multiples of the median (MoM), were plotted in relation to the previously published UK median. Central tendency and dispersion charts were produced for each operator measuring UtPI, and temporal analyses were conducted by analysis of cumulative sum charts (CUSUM).

Results
26,543 women attended for first trimester combined screening for chromosomal abnormalities. Mean UtPI was measured in 25,672 pregnancies and the median MoM was 1.031, which was within the expected range of 0.1 standard deviations on the Log10MoM scale. Of 42 operators with more than 50 examinations, 37 (88%) measured UtPI within the acceptable range. The screen positive rate (SPR) for preterm preeclampsia, using a cut-off of 1:100, was 11.8%, similar with previous validation studies.

Conclusion
Uterine artery Doppler is one of the main markers in first trimester screening for preeclampsia and its measurement is reliable among trained operators.