Accuracy of second trimester prediction of preterm preeclampsia by three different screening algorithms

Al-Amin A, Lorber Rolnik D, Black C, White A, Stolarek C, Brennecke S, da Silva Costa F
Royal Women's Hospital, Melbourne, Australia

Objective
To compare the performance of three different screening methods (NICE guidelines, ACOG recommendations and FMF algorithm) for second trimester prediction of preeclampsia.

Methods
This was a prospective non-intervention study in singleton pregnancies, including women attending for second trimester morphologic ultrasound at 19-22 weeks. Maternal characteristics, medical history, mean arterial pressure and mean uterine artery Doppler pulsatility index were recorded and used for risk assessment. Outcomes measured were preeclampsia with delivery before 34, before 37 and after 37 weeks’ gestation. Detection rates, false positive rates and positive likelihood ratios were calculated and ROC curves were produced.

Results
We screened 543 women during the study. Incidence of preeclampsia before 34, before 37 and after 37 weeks was 0.5%, 1.4% and 3.4%, respectively. Detection rates for prediction of preterm preeclampsia were 75%, 87%, 100%, and 100% for NICE guidelines, ACOG recommendations, FMF algorithm with a 1:100 cut-off and FMF algorithm at 1:60 cut-off, respectively. False positive rates were, 22%, 67%, 19% and 12% for NICE guidelines, ACOG recommendations, FMF algorithm with a 1:100 cut-off and FMF algorithm at 1:60 cut-off, respectively.

Conclusion
Second trimester combined screening for preterm preeclampsia by maternal history, mean arterial pressure and mean uterine artery Doppler pulsatility index (FMF algorithm) was superior than screening by maternal factors alone (NICE guidelines and ACOG recommendations).