

Hypertensive disorders in pregnancy: screening by uterine artery Doppler and blood pressure at 11-13 weeks

R. Lachmann, L.C. Poon, K.H. Nicolaides

Harris Birthright Research Centre for Fetal Medicine, King's College Hospital, London, United Kingdom

Objective: To examine the performance of screening for hypertensive disorders in pregnancy at 11-13 weeks by a combination of the maternal history, uterine artery Doppler and blood pressure.

Methods: Prospective screening study for preeclampsia (PE) requiring delivery before 34 weeks (early-PE), late-PE and gestational hypertension (GH) in women attending for their routine first hospital visit in pregnancy at 11+0-13+6 weeks of gestation. Maternal history was recorded, color flow Doppler was used to identify the uterine artery with the lowest pulsatility index (L-PI) and automated devices were used to measure the mean arterial pressure (MAP). The performance of screening for PE and GH by a combination of the maternal factor-related a priori risk, the uterine artery L-PI and MAP was determined.

Results: There were 8,061 (96.4%) cases that were unaffected by PE or GH, 37 that developed early-PE, 128 with late-PE and 140 with GH. The MAP was higher in early-PE, late-PE and GH than in the unaffected group ($p < 0.0001$) and in early-PE than in GH ($p = 0.002$). The uterine artery L-PI was significantly higher in early-PE and late-PE than in the unaffected group ($p < 0.0001$), in early-PE than late-PE ($p < 0.0001$), in early-PE than in GH ($p < 0.0001$) and in GH than in the unaffected group ($p = 0.014$). In screening by a combination of the maternal factor-related a priori risk, uterine artery L-PI and MAP the estimated detection rate, with 95% confidence interval, at a 10% false positive rate was 89.2% (74.6%-96.9%) for early-PE, 57.0% (48.0%-65.7%) for late-PE and 50.0% (41.4%-58.6%) for GH.

Conclusion: Effective screening for hypertensive disorders in pregnancy is provided by a combination of maternal history, uterine artery Doppler and blood pressure at 11-13 weeks.