Aim

To determine whether brachial artery flow-mediated dilatation (FMD) assessed during the first, second and third trimesters is able to predict or been associated with endothelial dysfunction in pre-eclampsia.

Methods

We carried out a series of three studies at 11-13+6 weeks, 18-22 weeks and 30 weeks. The right brachial artery was identified using color Doppler, between 2 and 5 cm above the cubital fold. The diameter of the brachial artery was measured by calculating the distance between the proximal and distal intima (D1) during diastole. Ischemia was caused for five minutes and the artery measurement was repeated 60 seconds after ending the compression (D2), during diastoles. The FMD (%) was calculated through the equation: (D2 -- D1) / D1 × 100. Subjects were prospectively followed and grouped according to the outcomes related to hypertensive disorders.

Results

Among 487 women scanned at 11-13+6 days 9 were diagnosed with early-onset PE (ePE), 22 with late-onset PE (lPE) and 47 with gestational hypertension (GH). In a total of 415 women scanned at 18-22 weeks, PE occurred 40 pregnancies, including 4 ePE, 36 lPE and 23 GH. At the third trimester, a case-control study was conducted with 81 women (40 PE and 41 controls). ROC curve analyses demonstrated that FMD at the 1st and 2nd trimesters was unable to predict pre-eclampsia. On the 3rd trimester we identified an association between endothelial dysfunction and pre-eclampsia.

Conclusion

We conclude that FMD should not be considered a potential first or second trimester marker of hypertensive disorders during pregnancy. At the third trimester, we identified an association between FMD and pre-eclampsia.