**Objectives**

Few biomarker studies to predict hypertensive disorders of pregnancy have collected samples prior to 11-14 weeks gestation. At 11-14 weeks, bhCG and AFP have been found to be potentially useful. We aimed to assess the performance of certain biomarkers in early pregnancy in predicting later pre-eclampsia/pregnancy induced hypertension (PET-PIH).

**Methods**

Consecutive pregnant women diagnosed with an intrauterine pregnancy on ultrasound scan between 5-14 weeks gestation were prospectively recruited from a single centre from March 2014-2016. Each participant underwent serial ultrasound scans and blood tests until 14 weeks gestational age (GA). Pregnancy outcomes were uncomplicated pregnancy or pregnancy complicated by hypertension.

Samples from healthy uncomplicated pregnancies were matched with those complicated by hypertension for age, BMI, ethnicity and GA. Progesterone, oestradiol, cancer antigen 125 (CA125), alpha-fetoprotein (AFP) and beta human choriogonadotrophin (bhCG) levels were measured. The biomarker levels were transformed and multiples of the median (MoM) computed to account for GA. The performance of these markers as predictors of hypertension in pregnancy were analysed.

**Results**

1003 women were recruited, and 99 pregnancies ended in first trimester miscarriage. Samples from 34 women with hypertension in pregnancy and 237 uncomplicated pregnancies were analysed. CA125 (AUC 0.631; 95% CI 0.53-0.731) and AFP (AUC 0.616; 95% CI 0.52-0.70) were the best predictors of hypertension in pregnancy, although overall their performance was weak. bhCG (AUC 0.444; 95% CI 0.369-0.522) in very early pregnancy were not useful.

**Conclusions**

We have shown that CA125 and AFP may be possible early pregnancy markers for hypertension in pregnancy. Although their performance in isolation was weak, their utility may be as part of multivariable strategy.