

First trimester screening data (uterine artery PI and PAPP-A) and pregnancy outcomes were also registered. Univariate data analysis was performed by using SPSS v22 software.

**Results:** Increased maternal body mass index (BMI) is a major risk factor for pre-eclampsia development ( $p=0.023$ ). Method of conception has an impact on the development of hypertensive disorders – the risk is higher if pregnancy has established after IVF procedure ( $p < 0.001$ ). Aspirin lowers prevalence of hypertensive disorders and its severeness among patients, who became pregnant after IVF or ICSI procedure ( $p < 0.001$ ).

**Conclusions:** The FMF calculator should be used routinely to evaluate the risk of PE development. If FMF calculations are not available aspirin can be recommended for all pregnant with obesity. Aspirin has proved its effectiveness in the prophylaxis of hypertensive disorders during pregnancy among IVF and ICSI patients.

### EP03.07

#### Early pregnancy biomarkers and prediction of hypertensive disorders of pregnancy

M. Al-Memar<sup>1</sup>, H. Fourie<sup>2</sup>, T. Vaulet<sup>5</sup>, S. Bobdiwala<sup>3</sup>, S. Saso<sup>4</sup>, B. De Moor<sup>5</sup>, C. Stalder<sup>3</sup>, P. Bennett<sup>3,6</sup>, D. Timmerman<sup>5</sup>, T. Bourne<sup>6,1</sup>

<sup>1</sup>Early Pregnancy and Acute Gynaecology Unit, Queen Charlotte's and Chelsea Hospital, Imperial College London, London, United Kingdom; <sup>2</sup>Early Pregnancy Unit, Imperial College Healthcare NHS Trust, London, United Kingdom; <sup>3</sup>Queen Charlotte's and Chelsea Hospital, Imperial College London, London, United Kingdom; <sup>4</sup>Obstetrics and Gynaecology, Imperial College London, London, United Kingdom; <sup>5</sup>KU Leuven, Leuven, Belgium; <sup>6</sup>Imperial College London, London, United Kingdom

**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 transvaginal 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 GA. Pregnancies 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 chorionic-gonadotrophin (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.

### EP03.08

#### Association between pulsatility index of uterine arteries, placental volume, weight, blood pressure and maternal blood glucose at week 12 and birthweight

A.O. Melo<sup>1,2</sup>, J.S. Tavares<sup>1</sup>, M.M. Amorim<sup>1,2</sup>, A.M. Dantas<sup>1</sup>, L.S. Trajano<sup>1</sup>, W.O. Cruz<sup>1</sup>, F.M. Ramos<sup>1</sup>, E.D. Barros<sup>1</sup>

<sup>1</sup>Saude da Mulher, Instituto de Pesquisa Professor Joaquim Amorim Neto, Campina Grande, Brazil; <sup>2</sup>Obstetricia, UNIFACISA, Campina Grande, Brazil

**Objectives:** To evaluate the association between the mean pulsatility index (PI) of uterine arteries, placental volume, maternal weight, blood pressure, maternal blood glucose at week 12 and birth weight.

**Methods:** A cohort study including 121 pregnant/fetuses/newborns. The pregnant women were evaluated at the 12th week and in the immediate postpartum period. Ultrasonography was performed at week 12 (Sansung WS80 Elite device), weight and blood pressure were also measured, as well as fasting glucose. An analysis of variance was performed to determine the association between the mean PI of the uterine arteries, placental volume, maternal weight, blood pressure and maternal blood glucose at week 12 and the adequacy of birthweight. Multiple regression analysis was performed too. The significance level of 5% was considered. The project was approved by the Ethics Committee.

**Results:** The mean blood glucose was  $68.4 \pm 9.3$ mg% (ranging from 43 to 96) and there was no association with birthweight ( $p=0.12$ ). The mean placental volume was  $67.0 \pm 24.3$  (ranging from 18.5 to 203.1) without association with birthweight ( $p=0.31$ ). Mean maternal weight was  $57.5 \pm 10.55$  (ranging from 38.3 and 84.4), without association with birthweight ( $p=0.15$ ). The median systolic and diastolic blood pressure were  $104 \pm 10.0$  and  $66 \pm 10.4$ , and there was no association with birthweight ( $p=0.83$  and  $0.98$ ). The mean PI mean was  $2.40 \pm 0.78$  (0.57 to 5.24) and this was associated with birthweight,  $p < 0.001$ , with a mean PI of  $2.29 \pm 0.64$  in the newborn with adequate weight and 4.22 in the small for gestational age. After multiple regression analysis, maternal glycemia (positive association) and PI of the uterine arteries (negative association) remained associated with birthweight.

**Conclusions:** Adequate birthweight was influenced by uterine artery IP (higher PI, lower birthweight) and glycemia (higher blood glucose greater birthweight) evaluated at week 12.

### EP03.09

#### Placenta volume at 10–12 weeks of gestation is a predictor of preterm delivery

J. Kwon, I. Park, J. Wie

Catholic University of Korea, Seoul, Republic of Korea

**Objectives:** To evaluate the performance of three-dimensional (3D) placenta volume (PV) and 3D power Doppler indices at first trimester of pregnancy in the prediction of preterm delivery.

**Methods:** A prospective cohort study including women with single pregnancies who underwent sonogram between 10-12 weeks of gestation. PV and 3D Doppler indices including vascularisation index (VI), flow index (FI) and vascularisation flow index (VFI) were measured using 3D power Doppler imaging and the VOCAL technique. Preterm delivery is defined as a spontaneous delivery before 37 weeks of gestation with labour or premature rupture of membrane. Cases of preeclampsia was excluded. The predictive ability of each variable was evaluated using receiver-operating characteristic (ROC) curves.

**Results:** Of 342 women included, 300 women were followed until delivery and preterm delivery was occurred in 35 women. Low Z-value of PV, VI, FI, and VFI were significantly associated with preterm delivery by Mann-Whitney U-test. ( $p=0.002, 0.025, 0.029$ )