Predective value of soluble fms-like tyrosine kinase-1 and placental growth factor in preeclampsia

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Objective
To determine the range of soluble fms-like tyrosine kinase-1 (sFLT-1) and placental growth factor (PIGF) concentrations and their ratio in non-pre-eclamptic (PE) Chinese pregnant women and to assess the clinical utility of the ratio in the prediction of PE in asian population.

Methods
In this prospective study women with a viable, singleton, spontaneously conceived pregnancy were randomly allocated to undergo a repeat blood withdraw procedure for measurement of serum levels of sFLT-1 and PIGF between 20 and 39 weeks of gestation. The relationship of sFLT-1, PIGF and the sFLT-1/PIGF ratio with gestation and maternal weight was assessed after transforming sFlt-1 and PIGF to multiples of the expected median (MoM). Clinical utility of the sFLT-1/PIGF ratio (≥38) in prediction of PE after 20 weeks of gestation was assessed. The sFLT-1-MoM/PIGF-MoM ratio was also assessed to see if it showed increased diagnostic utility compared to sFLT-1/PIGF ratio.

Results
A gestation specific reference range for sFLT-1, PIGF and sFLT-1/PIGF ratio was constructed from 953 women with median of 49 women per each different gestational week. sFLT-1, PIGF and their ratio exhibited a quadratic relationship with gestational age in non-PE pregnancies and was dependent on maternal weight after adjusting for gestational age. 34 of 81 (42%) women were admitted for hypertensive disorders of which 26 (76.4%) had a sFLT-1/PIGF ratio ≥38. Three of the 25 women had a sFLT-1/PIGF ratio <38. Two of these three preterm PE pregnancies were identified after correction using the ratio of the MoMs.

Conclusion
The maternal sFLT-1/PIGF ratio in women with hypertensive disorders in pregnancy carries prognostic value and its incorporation into clinical management may further help to identify patients at risk of deterioration as well as guiding their individualized care. Using sFLT-1 MoM/PIGF MoM ratio corrected for maternal weight and gestation age improves the prediction rate of pre-eclampsia.