The prognostic utility of soluble fms-like tyrosine kinase-1 (sFlt-1) and placental growth factor (PlGF) biomarkers for predicting preeclampsia: A secondary analysis of data from the INSPIRE trial

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Abstract

Objective: To compare the prognostic performance of biomarkers soluble fms-like tyrosine kinase-1 (sFlt-1), Placental Growth Factor (PIGF), and sFlt-1/PIGF ratio as continuous values or as a binary cut-off of 38 for predicting preeclampsia (PE) within 7 days. Design: Observational study using a clinical trial data Setting: Oxford University Hospitals, Oxford, United Kingdom (UK). Population: Pregnant women between 24+0 to 37+0 weeks of gestation with a clinical suspicion of preeclampsia. Main outcome: Onset of preeclampsia within seven days of the initial biomarker test. Methods: Logistic regression models for (i) sFlt-1 (ii) PlGF, (iii) sFlt-1/PlGF ratio (continuous), and (iv) sFlt-1/PlGF ratio as a cut-off above or below 38. Results: Of the total 370 women, 42 (11.3%) developed PE within seven days of screening. Models with sFlt-1 and sFlt-1/PIGF ratio (continuous) had greater overall performance than models with PIGF or with sFlt-1/PlGF ratio as a cut-off at 38 (R2: sFlt-1=55%, PIGF=38%, sFlt-1/PIGF ratio=57%, sFlt-1/PlGF ratio as cut-off at 38 model=46%). The discriminative performance was highest in the models with sFlt-1 (c-statistic=0.94) and sFlt-1/PIGF ratio (continuous) (c-statistic=0.94) compared to PIGF model (c-statistic=0.87) or sFlt-1/PlGF ratio cut-off at 38 (c-statistic=0.88). Conclusion: Models using values of continuous sFlt-1/PIGF ratio or sFlt-1 only had better predictive performance compared to a PIGF only model or the model with sFlt-1/PlGF ratio as a cut-off at 38. Further studies based on a larger sample size are warranted to substantiate this finding.

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