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Comparison of inter-assay measured levels of soluble fms-like tyrosine kinase-1 and placental growth factor and their ratio

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Objective

To assess the difference between measured levels of soluble fms-like tyrosine kinase-1 (sFlt-1), placental growth factor (PlGF) concentrations and its ratio.

Methods

Serum levels (pg/ml) of sFLT-1 and PlGF concentrations were concurrently measured in 953 women between 20 and 39 weeks of gestation in women with a viable singleton spontaneously conceived pregnancy using assays from Thermo Fisher Scientific (PlGFPlus, sFLT-1), Perkin Elmer (PlGF123) and Roche Diagnostics (PLGF, sFLT-1). The sFlt-1/PlGF ratio was derived. Bland Altman and Passing-Bablok analysis were performed to compare inter-assay differences.

Results

Tables1 & 2 summarize inter–assay differences and equivalent levels of the ratio for ruling in and out pre-eclampsia after 20 weeks Table1: Inter-manufacturer assay comparison Bland - Altman Passing –Bablok Bias LoA Slope (95% CI) Intercept (95% CI) PlGF Comparison PLGF123 vs PlGF -110 -471 – 250 0. 95 (0. 92 – 0. 97) -65. 8 (-73. 5 – -57. 4) PLGFPlus vs PlGF -124 -423 – 173 0. 83 (0. 82 – 0. 84) -16. 3 (-20. 4 – -13. 0) PLGF123 vs PLGFPlus -16 -442 – 293 1. 14 (1. 11 – 1. 17) -42. 8 (-52. 9 – -34. 9) sFLT-1 Comparison Roche vs Thermo 316 -93 – 725 0. 95 (0. 95 – 0. 96) -221 (-236 – -207) Table2: Equivalent levels of the sFlt-1/PlGF ratio between two manufacturers sFlt-1/PlGF ratio Roche Diagnostics Thermo Fisher Scientific Rule Out 38 55 Rule In 110 188.

Conclusion

Inter-assay differences are all clinically and significantly different. sFlt-1/PlGF rule in/rule out criteria are manufacturer specific and not interchangeable.