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Evaluation of first trimester maternal serum glycosylated fibronectin for preeclampsia screening

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Objective

To evaluate maternal serum glycosylated fibronectin (GlyFn) at 11-13 weeks as an alternative to placental growth factor (PlGF) or as an additional biomarker within the FMF screening test for preterm preeclampsia (PE).

Methods

This is a nested case-control study. GlyFn levels were retrospectively measured in serum of 1792 singleton pregnancies, 112 with PE and 1680 non-PE pregnancies matched for date of initial screening. All pregnancies were initially screened at 11-13 weeks for preterm PE using the FMF “Triple” test (maternal factors, mean arterial pressure (MAP), uterine artery pulsatility index (UtAPI) and PlGF). Levels of GlyFn were transformed to multiple of the expected median value (MoM) after correcting for maternal and pregnancy factors. Screening performance, area under receiver operating characteristic curve (AUC) and detection rate (DR) at 10% fixed false-positive rate (FPR), for preterm preeclampsia were determined using the FMF competing risk models with and without GlyFn and PlGF.

Results

AUC and DR when screening for preterm PE using FMF “Triple” test were 0.859 and 64.86%, respectively. Mean GlyFn MoM in PE, preterm PE pregnancies were significantly higher than that of non-PE pregnancies. GlyFn MoM in PE pregnancies was not significantly correlated with gestational age at delivery. Replacing PlGF with GlyFn in the “Triple” test gave AUC and DR of 0.866 and 71.43%, the ΔAUC was not significant (ΔAUC=0.007; p=0.70). Corresponding figures when adding GlyFn to the ‘Triple” test were 0.896, 82.86%, ΔAUC was significant. (ΔAUC=0.037; p=0.012).

Conclusion

Adding GlyFn as an additional biomarker to the FMF ‘Triple’ screening test for preterm PE improved preterm PE screening performance of the FMF "Triple" test. The findings would need to be confirmed in other populations.