The role of PLGF in the management of SGA fetuses

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Objective

To explore the value of measuring maternal serum PLGF in the prediction of the outcome and the timing of adverse events in small for gestational age fetuses.

Methods

Singleton pregnancies referred with suspicion of microsomia were included if they had: no indication for nor signs of imminent delivery, fetal abdominal circumference (AC) at or below the 10th centile and/or estimated fetal weight (EFW) at or below the 10th centile and/or umbilical artery pulsatility index (Umb-PI) at or above the 90th centile for gestation. Women with pre-eclampsia at presentation were excluded. Maternal blood was drawn at the first (index) visit and analyzed retrospectively. Development of pre-eclampsia, fetal demise and fetal deterioration diagnosed by fetal Doppler studies or fetal heart rate monitoring and leading to delivery were considered as adverse events.

Results

In 51 cases multiple regression analysis showed that family history of microsomia, index EFW and PLGF were significant predictors of the birthweight centile; index femur length centile and PLGF were significant predictors of pre-eclampsia; PLGF and index systolic blood pressure were significant predictors of iatrogenic preterm delivery <37 weeks whereas PLGF and index EFW were significant predictors of birthweight ≤5th centile and admission to the neonatal intensive care unit. For all outcomes the addition of maternal-fetal parameters did not improve the prediction compared to PLGF alone. In 59 cases the median incubation period from presentation to the clinic to an adverse event was 6,2 weeks, whereas half of the pregnancies (52.5%) did not develop any adverse event. PLGF was the strongest predictor of adverse events. Both PLGF in raw values and PLGF MOM had equally good predictive ability (AUC 0.82 and 0.78 respectively). Optimal cut-off points were 177.7pg/ml for PLGF raw values (sensitivity 83% and specificity 66.7%) and 0.277 MoM (sensitivity 76% and specificity 86.7%). On multiple Cox regression analysis maternal systolic blood pressure and PLGF and fetal increased umbilical artery PI and reduced CP ratio were independently associated with adverse events. Half of the pregnancies with low PLGF and only one in ten with high PLGF were delivered within two weeks after the initial visit.

Conclusion

In pregnancies complicated by fetal microsomia PLGF can be used to customize antenatal care as it identifies a very high-risk group that may benefit from intense surveillance.