

Validation of the FMF competing risks model for small for gestational age neonates

Dagklis T, Papastefanou I, Tsakiridis I, Sotiriadis A, Makrydimas A, Athanasiadis A
Aristotle University of Thessaloniki, Thessaloniki, Greece

Objective

To evaluate the new 36 weeks' Fetal Medicine Foundation (FMF) competing risks model for the prediction of small for gestational age (SGA) at the 30⁺⁰ to 34⁺⁰ weeks' gestation.

Methods

This is a cohort study on 3,012 women with singleton pregnancies undergoing routine ultrasound examination at 30⁺⁰ - 34⁺⁰ weeks' gestation, in three prenatal diagnostic centers in Greece. We used the default 36 weeks' FMF competing risks model for prediction of SGA combining maternal factors, estimated fetal weight by ultrasound scan (EFW) and uterine artery pulsatility index (UtA-PI), to calculate risks for different cut-offs of birthweight percentile and gestational age at delivery. We examined the model's accuracy by means of discrimination and calibration.

Results

The prediction of SGA <3rd percentile improves with the addition of UtA-PI and for deliveries closer to the examination. At 10% false positive rate, maternal factors, EFW and UtA-PI predicted 83.9%, 69.3% and 66.2% of SGA <10th percentile delivered <37, <40 and <42 weeks, respectively. The respective figures for SGA <3rd percentile were 88.0%, 74.4% and 72.8%. In terms of population stratification, if the biomarkers used are EFW and UtA-PI and the aim is to detect 90% for SGA <10th percentile, then 10.8% of the population should be scanned within two weeks after the initial assessment, an additional 7.2% (total screen positive rate, SPR 18%) should be scanned within two and four weeks after the initial assessment and an additional 11.7% (total SPR 29.7%) should be examined within four and six weeks after the initial assessment. The new model was well calibrated.

Conclusion

The 36 weeks FMF competing risks' model for SGA is also applicable and accurate at 30⁺⁰ - 34⁺⁰ weeks' gestation, providing effective risk stratification.