Cohort comparison study using Intergrowth-21\textsuperscript{st} vs GROW customised birth weight centiles in a homogenous caucasian population.

A Langrish, R Sawdy. Poole Hospital NHS Foundation Trust, UK.

Introduction

Our unit found, using the GROW customised analysis programme, that rates of SGA were far higher than expected: 40\% detection antenatally and 11\% SGA rates at birth. This study sampled the nearest cohort to SGA born babies (10\textsuperscript{th} to 25\textsuperscript{th} centile) to ascertain the false prediction of SGA rate comparing the GROW customised centile chart and then Intergrowth-21\textsuperscript{st} (I21) in our largely homogenous Caucasian population. Gardosi et al have shown that the GROW customised analysis has superior detection rates of SGA, thus identifying fetuses with an increased still birth risk\textsuperscript{1}. Nicolaides has validated that Hadlock EFW is most accurate when using I21\textsuperscript{2}. We wanted to compare the false allocation rates of both systems by looking at the nearest to normal cohort.

Methodology

Third trimester ultra-sound estimated fetal weight (EFW) Hadlock measurements (predicted) and term birth weight (detected) data were collected for 4495 deliveries in 2018. Birth weight centiles for our population were crudely calculated. 100 births were then selected for analysis from the 10\textsuperscript{th} to 25\textsuperscript{th} centile cohort as we hypothesised that the greatest miss allocation of SGA status would occur in this group. EFW and birth weight centiles were then compared using GROW and I21 packages.

Demographics

Maternity population of 4495, average BMI 27, 32\% primiparous. Ethnic origin; 87\% white Caucasian, Indian and Pakistani 12\%, African 0.5\%, Chinese 0.5\%. Fetal sex 61\% female and 39\% male.

Results

Median gestational age at delivery was 39 weeks and 2 days. GROW customised analysis falsely predicted 6.2\% would be SGA from an estimated fetal weight compared to 0\% compared with I21. GROW customised analysis of birthweight falsely ascribed 25\% as being SGA compared to 7.2\% with I21 in neonates that had birthweight between 2.8-3.1kg. Only in 4\% of cases did both GROW and I21 agree that a neonate was SGA in this normal group. Correlation to false SGA allocation to our population centile data was GROW at 79\% compared to I21 at 100\%.

Conclusion

Our data suggests that the GROW customised analysis has a higher prediction and detection rate for SGA in the 10\textsuperscript{th} to 25\textsuperscript{th} centile group of babies when compared to I21. It remains to be seen whether universal application of I21 would improve specific SGA detection.

References

1. Frances et al. Customised vs Intergroth-21\textsuperscript{st} standards for the assessment of birth weight and still birth risk at term. AJOG 2018;S692-699

Demographics

Maternity population of 4495, average BMI 27, 32\% primiparous. Ethnic origin; 87\% white Caucasian, Indian and Pakistani 12\%, African 0.5\%, Chinese 0.5\%. Fetal sex 61\% female and 39\% male.

Methodology

Third trimester ultra-sound estimated fetal weight (EFW) Hadlock measurements (predicted) and term birth weight (detected) data were collected for 4495 deliveries in 2018. Birth weight centiles for our population were crudely calculated. 100 births were then selected for analysis from the 10\textsuperscript{th} to 25\textsuperscript{th} centile cohort as we hypothesised that the greatest miss allocation of SGA status would occur in this group. EFW and birth weight centiles were then compared using GROW and I21 packages.

Results

Median gestational age at delivery was 39 weeks and 2 days. GROW customised analysis falsely predicted 6.2\% would be SGA from an estimated fetal weight compared to 0\% compared with I21. GROW customised analysis of birthweight falsely ascribed 25\% as being SGA compared to 7.2\% with I21 in neonates that had birthweight between 2.8-3.1kg. Only in 4\% of cases did both GROW and I21 agree that a neonate was SGA in this normal group. Correlation to false SGA allocation to our population centile data was GROW at 79\% compared to I21 at 100\%.

Conclusion

Our data suggests that the GROW customised analysis has a higher prediction and detection rate for SGA in the 10\textsuperscript{th} to 25\textsuperscript{th} centile group of babies when compared to I21. It remains to be seen whether universal application of I21 would improve specific SGA detection.

References

1. Frances et al. Customised vs Intergroth-21\textsuperscript{st} standards for the assessment of birth weight and still birth risk at term. AJOG 2018;S692-699