



Comparison of the accuracy of fetal weight estimation between technicians and physicians

Porat S, Yanai N, Yagel S

Hadassah Hebrew University Medical Center, Jerusalem, Israel

Objective

To compare the performance of technicians and ultrasound experts obstetricians with regard to sonographic fetal weight estimation.

Methods

The Hadassah ultrasound database was cross referenced with the births database for all patients who gave birth within 2 days of the ultrasound examination between 2010-2017. The obtained dataset includes examinations performed by either technicians or obstetricians who are ultrasound experts. Inclusion criteria were: singleton viable pregnancy ; all 4 measurements (AC, BPD, HC, FL) were detailed; performed by a single operator. Duplicate, incomplete and discordant records were excluded from analysis. The estimated fetal weight (EFW) was calculated according to two Hadlock formulas (AC-FL and AC-BPD). The EFW-BW difference (ie the difference between the actual birthweight and EFW) was calculated by the formula $(EFW-BW)/BW*100$. Then, the distributions of the EFW-BW difference for each formula were compared between technicians and obstetricians.

Results

The final dataset included 10, 175 ultrasound examination, of which 9, 785 were performed by technicians and 390 by physicians. When considering the entire dataset, technicians performed slightly better than physicians in both AC-FL and AC-BPD formulas, with a mean \pm SD EFW-BW difference of 3. 1 \pm 7. 9% vs 4. 5 \pm 10. 5% for AC-FL formula ($p=0. 001$) and 1. 8 \pm 8. 2% vs 5. 7 \pm 11. 4% for AC-BPD formula ($p<0. 001$). Like wise the proportion of estimations that fell within 10% of actual weight was also significantly higher in the technician group for both formulas (77. 4% vs 65. 4% for the AC-FL formula, $p<0. 001$; and 78. 3% vs 62. 6% for the AC-BPD formula, $p<0. 001$). However, when considering macrosomic neonates with BW \geq 4, 000 gm or fetuses with BW of $<2, 500$ gm performance of physicians and technicians did not differ for both formulas.

Conclusion

Technicians in our institute perform slightly better than physicians do in estimating fetal weight. However, there is no difference in performance at the extremes of fetal size. One explanation for the difference in performance could be the referral of the most challenging examinations to the physicians. Another conclusion that can be drawn is that physician's examination is unnecessary for the most part after examination by an experienced technician.