



STV analysis and prediction of adverse perinatal outcome and birthweight in singleton term pregnancies

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Objective

To analyze the evolution of computerized cardiotocography (cCTG) parameters at term pregnancy in a cohort of singleton pregnancies with known outcome.

Methods

This is a retrospective, cross sectional study of the last cCTG record in pregnancies at term. The analysis was based on the Philips Ob trace vue algorithm. Nomogram of Short term variability (bpm and ms) was constructed between 37 and 42 weeks of pregnancy. STV was also correlated with composite adverse outcome based on different variables (NICU admission, C Section for abnormal trace, neonatal birthweight below 5th centile, acidosis and low Apgar score at 5 min). Moreover subanalysis of the STV correlation with birthweight below 10th centile.

Results

5357 records were included in the analysis. First the nomogram of STV recorded at full term did not change related to gestational age (Fig1), especially the low centiles remained constant. 358 cases (6.7%) were classified as adverse outcome because of the presence of the composite variables described before. STV according to the Philips algorithm does not change from 37 to 42 weeks, the mean STV at 40 weeks is 0.82 bpm and 2.65 ms. STV regression and adverse outcome: The adverse perinatal outcome depends on the values of STV (p value = 0.002). The odds ratio 0.08 (0.03-0.12) of this parameter indicates that for every increase of the STV bpm (0, 1) the probability of APO reduces by 7.9%. The higher the STV the lower the adverse perinatal outcome. The results are similar when using STVms. The prediction model is statistically significant but the overall performance is poor as it has been observed in the ROC curve. There was no correlation between STV and birthweight. First we correlated the log STV with the Z score of the birthweight and there was no correlation. Secondly, we created three different subgroups of birthweight as shown in (fig2). There was no difference in the mean value of the STV within the different groups (below 3th centile, 3 - 10th centile and above 10th centile). This result was unexpected because therefore we cannot use STV to classify or manage growth restriction at term. The clinicians were blind to the results of the STV and this parameter was not use in the management of the pregnancy.

Conclusion

STV (bpm and ms) remained almost constant throughout pregnancy. There is a significant association between the STV and the composite adverse perinatal outcome, however in ROC curve analysis the area under the curve shows a poor predictive performance of STV using the Philips algorithm in the selection of adverse outcome and low birthweight at term gestations.