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Association and prediction of neonatal acidemia.

Cahill AG[1], Roehl KA, Odibo AO, Macones GA.

[1]Department of Obstetrics and Gynecology, Washington University School of Medicine in St. Louis, St. Louis, MO, USA.

Abstract

OBJECTIVE: The objective of this study was to estimate the predictive ability of electronic fetal monitoring (EFM) patterns immediately prior to delivery for acidemia at term birth.

STUDY DESIGN: This was a 4-year retrospective cohort study of 5388 consecutive singleton, nonanomalous gestations of 37 weeks or longer. The primary exposure was the EFM pattern in the 30 minutes preceding delivery. EFM patterns were prospectively interpreted using Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) nomenclature as well as non-NICHD measurements of decelerations. The primary outcome was umbilical cord arterial pH of 7.10 or less.

RESULTS: Four NICHD-defined EFM features within the 30 minutes prior to birth demonstrated the greatest association with acidemia: repetitive prolonged decelerations (area under the curve [AUC] 0.81), baseline tachycardia (AUC 0.80), repetitive variable decelerations (AUC 0.79), and repetitive late decelerations (0.78) after adjusting for nulliparity, fever, prolonged first stage, and obesity. A non-NICHD measure, total deceleration area, demonstrated superior predictive ability for acidemia (AUC 0.83, P = .04).

CONCLUSION: A non-NICHD measure of deceleration frequency and severity in the second stage performed superior to 4 NICHD EFM features for predicting fetal acidemia.