Acta Obstet Gynecol Scand. 2015 Feb;94(2):175-82. doi: 10.1111/aogs.12548. Epub 2014 Dec 25.

The added predictive value of biphasic events in ST analysis of the fetal electrocardiogram for intrapartum fetal monitoring.

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OBJECTIVE: To study the predictive value of biphasic ST-events for interventions for suspected fetal distress and adverse neonatal outcome, when using ST-analysis of the fetal electrocardiogram (FECG) for intrapartum fetal monitoring.

DESIGN: Prospective cohort study.

SETTING: Three academic hospitals in Sweden.

POPULATION: Women in labor with a high-risk singleton fetus in cephalic position beyond 36 weeks of gestation.

METHODS: In women in labor who were monitored with conventional cardiotocography, ST-waveform analysis was recorded and concealed. Traces with biphasic ST-events of the FECG (index) were compared with traces without biphasic events of the FECG. The ability of biphasic events to predict interventions for suspected fetal distress and adverse outcome was assessed using univariable and multivariable logistic regression analyses.

MAIN OUTCOME MEASURES: Interventions for suspected fetal distress and adverse outcome (defined as presence of metabolic acidosis (i.e. umbilical cord pH <7.05 and base deficit in extracellular fluid >12 mmol), umbilical cord pH <7.00, 5-min Apgar score <7, admittance to neonatal intensive care unit or perinatal death).

RESULTS: Although the presence of biphasic events of the FECG was associated with more interventions for fetal distress and an increased risk of adverse outcome compared with cases with no biphasic events, the presence of significant (i.e. intervention advised according to cardiotocography interpretation) biphasic events showed no independent association with interventions for fetal distress [odds ratio (OR) 1.71, 95% confidence interval (CI) 0.65-4.50] or adverse outcome (OR 1.96, 95% CI 0.74-5.24).

CONCLUSION: The presence of significant biphasic events did not discriminate in the prediction of interventions for fetal distress or adverse outcome. Therefore, biphasic events in relation to ST-analysis monitoring during birth should be omitted if future studies confirm our findings.