

Change in heart rate variability in relation to a significant ST-event associates with newborn metabolic acidosis.

Siira S, Ojala T, Ekholm E, Vahlberg T, Blad S, Rosén KG.

Research Centre of Applied and Preventive Cardiovascular Medicine, University of Turku, Turku, Finland. saila.siira@fimnet.fi

OBJECTIVE: To find whether low-to-high frequency (LF/HF) ratio of fetal heart rate (FHR) variability changes in relation to a significant ST-event during delivery, and if the change is predictive of metabolic acidosis of the newborn.

DESIGN: A case-control study.

SETTING: Data from a multicentre project.

SUBJECTS: Acidotic and control fetuses with abnormal cardiotocography together with a ST-event in fetal electrocardiogram (ECG).

METHODS: We studied intrapartum FHR variability with spectral analysis from 34 fetuses with a significant ST-event in the fetal ECG. LF/HF ratio of FHR variability was measured within a period of 1 hour before and 1 hour after a significant ST-event. Sensitivity and specificity of the change in LF/HF ratio of FHR variability in prediction of metabolic acidosis (pH < or = 7.05 and base deficit value > 12.0 mmol/l) of the newborn were described by means of the receiver operating characteristic curve.

MAIN OUTCOME MEASURES: Change in LF/HF ratio of FHR in relation to a significant ST-event. **RESULTS:** We found that a relative change in LF/HF ratio greater than 30% in relation to a significant ST-event predicted cord arterial metabolic acidosis with a sensitivity of 89% (95% CI 68-100%) and specificity of 80% (95% CI 64-96%).

CONCLUSIONS: Relative changes in LF/HF ratio of FHR variability in relation to a significant ST-event are more pronounced in fetuses born with metabolic acidosis.