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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 ($\text{pH} < \text{or} = 7.05$ 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.