

ST analysis of the fetal electrocardiogram during labor: Nordic observational multicenter study.

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OBJECTIVE: To assess the diagnostic power of cardiotocography (CTG) plus the ST interval of the electrocardiogram (ECG) clinical guidelines with combined fetal heart rate and ST waveform analysis of the fetal ECG recorded during labor, to identify an adverse labor outcome (neonatal neurological symptoms and/or metabolic acidosis).

STUDY DESIGN: An observational, multicenter study was undertaken in 12 Nordic labor wards. A total of 573 women in labor were monitored using a prototype of the STAN S 21 recorder with fetal ECG data and computerized ST analysis.

RESULTS: Fifteen cases of intrapartum fetal hypoxia identified from neurological neonatal symptoms and/or cord artery pH < 7.05 with base deficit in extracellular fluid > 12.0 mmol/l were recorded. All these cases were identified by CTG + ST clinical guidelines. Five developed neonatal symptoms and had ECG abnormalities during the first stage of labor and, of the remaining ten, eight showed ST changes during active pushing in the second stage. Another eight cases had acidemia only and normal neonatal outcome. Seven of these displayed CTG + ST abnormalities. The high sensitivity of CTG + ST to predict fetal acidosis was associated with a marked increase in positive predictive values compared with conventional CTG.

CONCLUSION: The STAN clinical guidelines identify fetuses at risk of intrapartum asphyxia.