

Cardiotocography only versus cardiotocography plus ST analysis of fetal electrocardiogram for intrapartum fetal monitoring: a Swedish randomised controlled trial.

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BACKGROUND: Previous studies indicate that analysis of the ST waveform of the fetal electrocardiogram provides information on the fetal response to hypoxia. We did a multicentre randomised controlled trial to test the hypothesis that intrapartum monitoring with cardiotocography combined with automatic ST-waveform analysis results in an improved perinatal outcome compared with cardiotocography alone. **METHODS:** At three Swedish labour wards, 4966 women with term fetuses in the cephalic presentation entered the trial during labour after a clinical decision had been made to apply a fetal scalp electrode for internal cardiotocography. They were randomly assigned monitoring with cardiotocography plus ST analysis (CTG+ST group) or cardiotocography only (CTG group). The main outcome measure was rate of umbilical-artery metabolic acidosis (pH <7.05 and base deficit >12 mmol/L). Secondary outcomes included operative delivery for fetal distress. Results were first analysed according to intention to treat, and secondly after exclusion of cases with severe malformations or with inadequate monitoring. **FINDINGS:** The CTG+ST group showed significantly lower rates of umbilical-artery metabolic acidosis than the cardiotocography group (15 of 2159 [0.7%] vs 31 of 2079 [2%], relative risk 0.47 [95% CI 0.25-0.86], p=0.02) and of operative delivery for fetal distress (193 of 2519 [8%] vs 227 of 2447 [9%], 0.83 [0.69-0.99], p=0.047) when all cases were included according to intention to treat. The differences were more pronounced after exclusion of 291 in the CTG+ST group and 283 in the CTG group with malformations or inadequate recording. **INTERPRETATION:** Intrapartum monitoring with cardiotocography combined with automatic ST-waveform analysis increases the ability of obstetricians to identify fetal hypoxia and to intervene more appropriately, resulting in an improved perinatal outcome.