

Cardiotocography plus ST analysis of fetal electrocardiogram compared with cardiotocography only for intrapartum monitoring: a randomized controlled trial.

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Erratum in Obstet Gynecol. 2011 Feb;117(2 Pt 1):412.

OBJECTIVE: To estimate the effectiveness of intrapartum fetal monitoring by cardiotocography plus ST analysis using a strict protocol for performance of fetal blood sampling.

METHODS: We performed a multicenter randomized trial among laboring women with a high-risk singleton pregnancy in cephalic presentation beyond 36 weeks of gestation. Participants were assigned to monitoring by cardiotocography with ST analysis (index) or cardiotocography only (control). Primary outcome was metabolic acidosis, defined as an umbilical cord artery pH below 7.05 combined with a base deficit calculated in the extracellular fluid compartment above 12 mmol/L. Secondary outcomes were metabolic acidosis in blood, operative deliveries, Apgar scores, neonatal admissions, and hypoxic-ischemic encephalopathy.

RESULTS: We randomly assigned 5,681 women to the two groups (2,832 index, 2,849 control). The fetal blood sampling rate was 10.6% in the index compared with 20.4% in the control group (relative risk 0.52; 95% [CI] 0.46-0.59). The primary outcome occurred 0.7% in the index compared with 1.1% in the control group (relative risk 0.70; 95% CI 0.38-1.28; number needed to treat 252). Using metabolic acidosis calculated in blood, these rates were 1.6% and 2.6%, respectively (relative risk 0.63; 95% CI 0.42-0.94; number needed to treat 100). The number of operative deliveries, low Apgar scores, neonatal admissions, and newborns with hypoxic-ischemic encephalopathy was comparable in both groups.

CONCLUSION: Intrapartum monitoring by cardiotocography combined with ST analysis does not significantly reduce the incidence of metabolic acidosis calculated in the extracellular fluid compartment. It does reduce the incidence of metabolic acidosis calculated in blood and the need for fetal blood sampling without affecting the Apgar score, neonatal admissions, hypoxic-ischemic encephalopathy, or operative deliveries.