

Combined cardiotocographic and ST event analysis: A review.

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ABSTRACT

ST-analysis of the fetal electrocardiogram (ECG) (STAN®) combined with cardiotocography (CTG) for intrapartum fetal monitoring has been developed following many years of animal research. Changes in the ST-segment of the fetal ECG correlated with fetal hypoxia occurring during labor. In 1993 the first randomized controlled trial (RCT), comparing CTG with CTG + ST-analysis was published. STAN® was introduced for daily practice in 2000. To date, six RCTs have been performed, out of which five have been published. Furthermore, there are six published meta-analyses. The meta-analyses showed that CTG + ST-analysis reduced the risks of vaginal operative delivery by about 10% and fetal blood sampling by 40%. There are conflicting results regarding the effect on metabolic acidosis, much because of controversies about which RCTs should be included in a meta-analysis, and because of differences in methodology, execution and quality of the meta-analyses. Several cohort studies have been published, some showing significant decrease of metabolic acidosis after the introduction of ST-analysis. In this review, we discuss not only the scientific evidence from the RCTs and meta-analyses, but also the limitations of these studies. In conclusion, ST-analysis is effective in reducing operative vaginal deliveries and fetal blood sampling but the effect on neonatal metabolic acidosis is still under debate. Further research is needed to determine the place of ST-analysis in the labor ward for daily practice.