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META-ANALYSIS SHOWS SIGNIFICANT IMPROVEMENTS WITH ST ANALYSIS

In March 2013 a meta-analysis (MA) by Schuit et al[1] with the objective to investigate the additional effect of ST Analysis in electronic fetal monitoring was published in AJOG. The analysis showed a significant reduction of operative vaginal deliveries and fetal blood sampling in the CTG+ST group together with a 25% reduction in the incidence of metabolic acidosis which was not statistically significant.

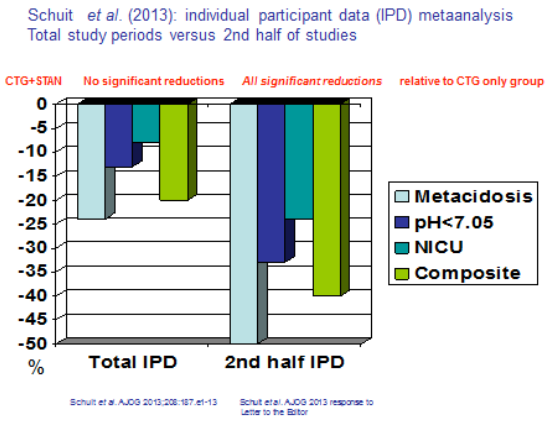
The method the authors used is called individual participant data (IPD). This means that all individual data from the studies were pooled together forming the result, as if each included randomised controlled trial (RCT) represented one centre in a multi-centre trial. However, due to the differences in time periods when the RCTs are performed and the differences in study protocols that are used, an IPD MA is not equal to one large multi-centre RCT. Still, some claim that IPD meta-analyses are the gold standard.

There are in total five published RCTs comparing EFM+ST to EFM alone. The first RCT was performed in Plymouth and published in 1993 by Westgate et al. This RCT was not included in the IPD MA. The authors argue that the reason was the method for ST Analysis used in this early RCT was different from the method used in the more recent studies.

In May 2013 a Letter to Editor of AJOG by KG Rosén[2] was published on-line. The letter criticizes three main issues in the IPD MA. First that the authors have not used defined rules to validated the cord acid base data, secondly that the exclusion of the Plymouth trial due to differences in method is biased and thirdly that the authors have not separated the studies into a first and a second half and compared the results.
In the same issue of AJOG on-line an answer from Schuit[3] is published. On the first question regarding validation of cord-acid base data, the authors argue that in an intention-to-treat analysis no data should be excluded, and that their techniques for imputation results in a reliable representation of the original data.

Regarding exclusion of the Plymouth data, Schuit admits that IPD for the trial was not available and that this added to the decision to exclude the trial from the analysis. Schuit also acknowledges that after a two-step approach adding the Plymouth results to the IPD MA they found a significant reduction of metabolic acidosis in the CTG+ST arm. Still the author argues that the result presented in the MA is unbiased.

The third question regarding learning effect of ST Analysis and results divided into a first and second half of the studies, Schuit also admits that they found a difference. In fact, analysis of the second half of the IPD showed statistically significant reduction of metabolic acidosis, admission to NICU and composite adverse neonatal outcome for EFM+ST compared to EFM alone. We know any new technology requires a learning curve. Evidence in this case demonstrates the significance and benefit of EFM+ST Analysis.



1. Schuit et al. Effectiveness of electronic fetal monitoring with additional ST analysis in vertex singleton pregnancies at >36 weeks of gestation: an individual participant data metaanalysis. Am J Obstet Gynecol 2013;208:187.e1-13.

2. Rosén KG. ST analysis reviewed. Am J Obstet Gynecol. 2013 May 9. pii: S0002-9378(13)00489-4 doi: 10.1016/j.ajog. 2013.05.013. [Epub ahead of print]

3. Schuit E. Reply to Letter # E13-016AR1. Am J Obstet Gynecol. 2013 May 9. pii: S0002-9378(13)00490-0. doi: 10.1016/j.ajog. 2013.05.014. [Epub ahead of print]