The effect of early oxytocin augmentation in labor: a meta-analysis
Wei SQ, Luo ZC, Xu H, Fraser WD

CRD summary
The authors concluded that early oxytocin augmentation of labour was associated with an increase in spontaneous vaginal delivery. Further research was needed to obtain more robust conclusions. This was a generally well-conducted review. The authors’ cautious conclusions reflected the evidence, but the small number of trials of uncertain quality should be borne in mind when interpreting the findings.

Authors' objectives
To assess the effects of early oxytocin augmentation for delay in labour on method of delivery and on indicators of maternal and neonatal morbidity.

Searching
PubMed and EMBASE were searched through to February 2009 for publications in any language. Search terms were reported. The Trial Registry of the Cochrane Collaboration Pregnancy and Child Birth Review Groups was searched for unpublished trials.

Study selection
Randomised controlled trials (RCTs) that compared early augmentation of labour with oxytocin versus a more conservative form of management in pregnant women in labour who had not previously used oxytocin were eligible for inclusion. Only trials in which comparison groups received similar and standardised membrane management were eligible. Trials were required to measure at least one of the outcomes: caesarean delivery; spontaneous vaginal delivery; operative vaginal delivery; duration of labour; analgesia; hyperstimulation of labour; postpartum haemorrhage; maternal blood transfusion; antibiotic use; vaginal tears; and neonatal complications.

Included trials were conducted in UK, USA and Canada, Finland and South Africa and were of women in normal labour at randomisation, or women with prolonged labour (dystocia). Just over half the trials reported a single foetus with vertex or cephalic presentation. Most trials reported this to be the woman’s first birth. Oxytocin was administered at various times across studies and commenced in women with a mean (or median) cervical dilatation of 5cm or less. Control groups received expectant management or ambulation, with oxytocin administered at a later stage (usually after four to eight hours) if necessary. Women in most trials underwent amniotomy.

Two reviewers independently screened studies for inclusion.

Assessment of study quality
Two reviewers independently assessed studies for selection, performance, detection and attrition bias (as defined by previously published criteria). Disagreements were resolved through referral to a third reviewer.

Data extraction
Two reviewers independently extracted dichotomous data to calculate relative risks (RRs) and 95% confidence intervals (CIs). Continuous data were extracted to calculate mean differences and 95% CIs. Primary authors were contacted for further data where necessary.

Methods of synthesis
A fixed-effect model was used to combine relative risks and mean differences, with 95% CIs. A random-effects model was used when there was evidence of statistical heterogeneity. Number needed to treat (NNT) was calculated. Statistical heterogeneity was assessed using the I² statistic.

Sensitivity analysis was undertaken by removal of trials that did not use amniotomy before randomisation and trials that compared oxytocin with ambulation.
Results of the review
Nine RCTs (n=1,983, range 14 to 694) were included in the review. All trials reported methods of randomisation. One trial reported blinding to treatment. No other details of study quality were reported.

Spontaneous vaginal deliveries were increased in women who received early oxytocin (RR 1.09, 95% CI 1.03 to 1.17, NNT=20; eight RCTs). Oxytocin augmentation did not have a statistically significant effect on caesarean delivery (nine RCTs) and operative vaginal deliveries (eight RCTs). There was a statistically significant reduction in antibiotic use in women who received early oxytocin augmentation (RR 0.45, 95% CI 0.21 to 0.99; two RCTs), but there was evidence of increased risk of hyperstimulation (RR 2.90, 95% CI 1.21 to 6.94; two RCTs). No other statistically significant differences were reported for other maternal and neonatal outcomes. There was no evidence of significant statistical heterogeneity for any outcome comparisons.

Sensitivity analysis did not significantly alter the results, although the review suggested that only two trials included ambulation and were removed and the table suggested that three trials included ambulation.

Three of five trials that reported subjective outcomes reported worse pain or unpleasant treatment in women who received early oxytocin.

Authors' conclusions
Early oxytocin augmentation of labour was associated with an increase in spontaneous vaginal delivery. Further research was needed to obtain more robust conclusions.

CRD commentary
The review question and inclusion criteria were clearly defined. A satisfactory search was undertaken to locate published and unpublished trials in any language. Each stage of the review process was undertaken in duplicate, which reduced potential for reviewer error and bias. Trial quality was assessed, but details were limited and this made it difficult to determine the quality of the included trials. The authors highlighted a lack of reporting on details on other aspects of care during childbirth, uncertainty about the number of protocol deviations and that regimens of oxytocin varied across studies. Appropriate methods were used to assess statistical heterogeneity and no evidence of significant heterogeneity was found.

This was a generally well-conducted review. The authors’ cautious conclusions appeared to reflect the available evidence, but the small number of trials and their uncertain quality should be borne in mind when interpreting the findings.

Implications of the review for practice and research
Practice: The authors stated that women should be informed of the potential benefits of early oxytocin augmentation on delivery methods as well as potential discomfort and pain. The woman's views should be taken into consideration when planning labour management.

Research: The authors stated that further research was needed to assess safety, efficacy, acceptability and cost implications of early oxytocin management. Oxytocin should be evaluated with and without amniotomy.

Funding
Canadian Institutes of Health Research (CIHR); CIHR Strategic Training Initiative in Research in Reproductive Health Sciences; Fonds de Recherché en Sante du Quebec; CIHR.

Bibliographic details

PubMedID
Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.