

Cell biology 2019: Effects of oxytocin and misoprostol for labour induction on umbilical cord blood gas parameters- Narantungalag - Mongolian National University of Medical Science

Narantungalag

Mongolian National University of Medical Science

safe, painless, inexpensive, comfortable and effective.

Resume

To compare the effects of oxytocin and misoprostol used in labor fetal blood gas parameters. This prospective randomized trial involved 60 women who completed 37-42 gestational weeks and who required labor induction prior to normal vaginal birth. Labor was induced in 30 women with an intravenous low dose oxytocin regimen and in 30 with intravaginal misoprostol (PGE1). Following childbirth, umbilical artery blood gas was analyzed, with pH, pCO₂, pO₂, HCO₃ and base excess (BE) compared in the two groups. Mean age and obstetrical data (gravidity, parity, gestational weeks and birthweight) were similar in the two groups (p>0.05). All infants had 1 and 5

was similar in the oxytocin and misoprostol groups (7,30±0,08 vs. 7.32±0.05, p=0.781), as were the other blood gas parameters (pCO₂, pO₂, base excess and HCO₃; p>0.05 each).

Induction of labor with either oxytocin or misoprostol in women with uncomplicated term pregnancies had no adverse effects on umbilical artery blood gas parameters.

Key words: Oxytocin, misoprostol, umbilical artery blood gas, labor induction, pH

Introduction

Induction of labor refers to the process whereby uterine contractions are initiated by mechanical or pharmacological methods before the onset of spontaneous labor¹. Induction of labor is advised in situations when the pregnancy is dangerous for the mother or fetus; or when induction is beneficial for both. Induction of labor decreases operative labor and minimizes risks to the fetus. Among the factors influencing the method used to induce labor are cervical and membrane status, parity, and patient and provider preferences⁴. The ideal method should be

who received oxytocin infusion starting from 2 mIU/min, increasing the dose by 2 mIU/min increments every 20 min to a maximum of 30 mIU/min in 0.9% saline. The second group consisted of healthy babies of 30 women who received 25 µg misoprostol every 4 h placed in the posterior fornix of the vagina. Following vag. birth, the umbilic()-3x cord was clamped, and a 2 cc blood sample was drawn from the umbilic()-3x artery within 30 seconds. Blood gas samples were analyzed for pH, pCO₂, pO₂, HCO₃ and base excess (BE), while obeying the rules of cold chain. One and five minute APGAR scores of each newborn were recorded.

This study protocol was approved by the Local Ethics Committee of our Hospital, and all subjects provided informed consent.

Statistical analysis was performed using SPSS software. A one-way ANOVA F test was used for the comparison. P < 0.05 indicated statistical significance.

Results

The mean age of the women enrolled in this study was 26.5±5.05 years, the mean gestation age was 39.85±0.6 weeks. The demographic and obstetric characteristics of the two groups were comparable (p>0.05 each

Table 1). All infants had

pCO₂, pO₂, HCO₃ and BE showed no differences between the oxytocin and misoprostol groups (p>0.05 each Table 2).

Table 1. Baseline characteristics

fetal distress, we excluded women with chronic maternal disease, complications of pregnancy or fetal distress, and included only uncomplicated pregnancies ending with vaginal birth. Evaluations included Apgar scores and umbilical artery blood gas parameters of the newborn to determine whether acidemia had occurred.

morbidity and mortality were found to be increased at

observed in term babies with umbilical artery pH >7.09. Uterine perfusion decreases during contractions, and increased uterine activity has negative effects on uteroplacental and fetoplacental circulation¹¹. Intravenous oxytocin was shown to result in hyperstimulation in 8.3-11.1% of women and fetal distress in 15.9-18%, suggesting that oxytocin application during labor may trigger fetal oxidative stress^{5, 12}. However, oxytocin did not have any negative effects on pH and did not increase perinatal risk^{11, 13}. When we investigated the effects of oxytocin-induced labor on fetal acid-base status, we observed an acid-base balance in the umbilical cord, a finding supported by intrapartum cardiotocographic findings and Apgar scores. Thus, the use of oxytocin to assist labor does not have negative effects on the fetus^{11, 13}. Intracervical or intravaginal application of misoprostone (PGE1) is also frequently used to induce labor^{5, 6, 10}. Long term treatment with low-dose controlled misoprostol was well tolerated by both the mother and the fetus (14), with uterine hyperstimulation rates of 7.4-7.8% and fetal distress rates of 10.9-26%^{5, 12}. In comparison, we observed lower uterine hyperstimulation (2.6%) and fetal distress (7.7%) rates in our misoprostol group, whereas the fetal distress rate in our oxytocin group m(I)7(n) 472.03 26

Also there was no significant difference between oxytocin and dinoprostone groups in pH, pCO₂, pO₂, HCO₃ and BE values in umbilical artery blood gas analyzes (P> 0.05). Three of the neonates in the oxytocin group and 2 of the neonates in the dinoprostone group were admitted to the neonatal intensive care unit and no significant difference was found between the groups (Table 2). All newborns admitted to intensive care unit were discharged together with their mothers in good health.

Discussion

The initiation of labor has become a routine procedure in gynecology and obstetrics clinics. We compared the effects of two different methods of labor induction on fetal blood gas parameters. To exclude the effects of

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