

Prostaglandin E1, E2 and oxytocin in labor induction

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Abstract: The risks of induction must be carefully weighed against the risks of allowing the pregnancy to continue and not inducing labor. The aim of the study was to show labor and neonatal outcome of 335 deliveries induced in 2004 at Institute of gynecology and obstetrics Clinical Center of Serbia. Inductions were performed with PGE2, PGE1 and Oxytocin. The best ripening effect was noted in PGE2 group. The average duration of labor was 8.6h in PGE1group, 5.9h in PGE2 group and 10.4h in OT group. Sixty eight labors finished with cesarean section (20%). Comparing duration of labor, percentage of emergency cesarean sections, incidence of fetal distress during the labor we suggest Dinoprostone, placed intracervically, as an agent of choice for induction of labor.

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1 Introduction

The risks of induction must be carefully weighed against the risks of allowing the pregnancy to continue and not inducing labor. Cervical ripening with prostaglandin shortens the duration of labor and increases the likelihood of vaginal delivery compared to induction with oxytocin alone.

2 Statistical methods and Experimental Procedures

The aim of the study was to show labor and neonatal outcome of 335 deliveries induced in 2004 at Institute of gynecology and obstetrics Clinical Center of Serbia. The patients were divided in three groups. Group I included 81 patient whose labor was induced with

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PGE1. Group II 210 patients where we used PGE2 and group III 44 patients where we used oxytocin. The inclusion criteria included singleton pregnancy, vertex presentation, Bishop score of ≤ 6 , gestational age of ≥ 34 weeks, intact membranes with no previous stripping, absence of labor or fetal distress, no previous cesarean delivery or other types of uterine surgery, no definite cephalopelvic disproportion and no contraindication to the use of prostaglandin. The groups were randomised according to the age and parity. Misoprostol (50 mcg) was placed into the posterior vaginal fornix every 4 hours. Dinoprostone (PGE2) was placed intracervically (3mg) and it was not repeated. Augmentation was performed with oxytocine. Oxytocine was administered in cases when cervix was at least 2cm, dilated and 75% effaced in dosage regimen of 1-2 mU/min intravenously. After drug administration in all groups, vital signs and side-effects were monitored hourly and continuous external cardiotocography (CTG) was performed in all cases. The primary outcome measure was the interval from the active phase of labor to vaginal delivery. Other outcome measures included cesarean section rate, tachysystole, hyper stimulation and failed induction. Neonatal outcome measures were birth weight, Apgar scores at 1 and 5 min, and neonatal morbidity and mortality. Statistical data was analyzed with chi square test. It is used to test between categorical variables. It includes a table of actual and expected counts.

3 Results

In Table 1 is shown that there was no statistical difference between the groups in age and parity and preterm labors. In all other data the difference was statistically significant.

The weakest effacement effect had PGE1. Seventy percent of patients had dilatation of cervix more than 2 cm. Four patients from group I had less than 1cm as well as 4 patients from group III. The difference was highly significant. (chi square is 71)

The average duration of labor was 8.6 h in group I, 5.9 h in group II and 10.4 h in group III. The difference was highly significant (chi square is 227). Prolonged labor (more than 12h) had 16% of patients in group I, 4.3% in group II and 38.6% in group III. During the labor we noticed one hyper stimulation in group I.

Table 1 The summary results of the study.

	GROUP I	GROUP II	GROUP III	statistical data
average age	27.2	29.6	29.2	p<0.05
nulliparity	79%	56.6%	82%	p<0.05
preterm gestation	1.2%	0.5%	2.2%	p<0.05
percentage of SC	13.5%	0.9%	87%	p>0.01
APGAR score less than 7	5%	0.5%	4.5%	p>0.01
average duration of labor	8.6h	5.9h	10.4h	p>0.01
OT augmentation	53%	47.6%		p<0.05
average BISHOP score	5	4.8	4.0	p>0.01

The analysis of APGAR score of newborns showed that 3% had score less than 5, 7% had score between the 5-8. Majority (90%) had no signs of periparturient asphyxia. Difference between the groups was highly significant (chi square is 54).

Sixty eight labors finished with cesarean section (20%). The indications for emergency cesarean section were: fetal asphyxia in 40 patients, hyper stimulation in 1 patient and labor dystocia in 27 patients. Statistical difference was highly significant (chi square is 13).

4 Discussion

Ben Haroush [1] had 25% of SC in patients induced with vaginal PGE₂, comparing to 9% in vaginal spontaneous deliveries. Yogev [2] had 19.4% in the induced group and 9% in spontaneous group. Nigam [3] study showed that induction with PGE₁ shortened duration of the labor and did not change percentage of SC. De Aquino [4] compared PGE₁ and oxytocin and found less SC and shortening duration of the labor, but increase number of hyper stimulations in PGE₁ group. Pandis [5] study looked for the difference between PGE₁ and PGE₂ as inductive agents and found that PGE₁ had shorter duration of labor, less SC, but more hyper stimulation Sy during the labor. Comparing duration of labor, percentage of emergency cesarean sections, incidence of fetal distress during the labor we suggest Dinoprostone, placed intracervically, as an agent of choice for induction of labor.

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