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ORIGINAL ARTICLE

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Programed labor

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OBJECTIVE(S): To evaluate the various effects of programed labor protocol on normal nulliparas and their neonates.

METHOD(S): Two hundred women with 37 to 41 weeks pregnancy with vertex presentation in active phase of labor without any fetal or maternal complication were alternately allocated to two groups. Hundred women received programed labor protocol while 100 were managed expectantly and taken as controls.

RESULTS : Fifty-four percent of subjects achieved good pain relief. Onset of the analgesic effect started in 17 minutes. No fetal and maternal complications or adverse effects were observed. Duration of all stages of labor were reduced.

CONCLUSION(S): Programed labor protocol provides effective labor analgesia, augments the process of labor and significantly reduces third stage blood loss without adversely affecting the fetus.

Key words : labor analgesia, pain relief, partogram

Introduction

Labor pain is among the most severe pain experienced by women. It is not simply the physical pain that can be explained on basis of physiological, chemical and neurological phenomena but it is aggravated by anxiety, fear and ignorance. In a civilized society freedom from pain is one of the basic rights of a person. Programed labor protocol is based on incorporation of labor analgesia, active management of labor and monitoring events of labor by a partogram.

Methods

The present study was conducted from January 2004 to October 2004. Two hundred nulliparous women at 37 to 41 weeks gestational age with vertex presentation and in active phase of labor with cervical dilatation of 3-4 cm and almost fully effaced cervix, were included in the study. None had clinical evidence of cephalopelvic disporportion, or history of medical disorders like hypertension, cardiac disease, bronchial asthma, diabetes, and jaundice. They were alternately allocated to two groups – study group and control group. The study group consisted of 100 women who received programed labor protocol while the control group of 100 pregnant women were managed expectantly.

In all women general examination, systemic examination and obstetric examination including vaginal examination were performed. Informed consent for inclusion in the study was obtained. The study was done in colloboration with a pediatrician.

In the study group, an amniotomy was performed to confirm clear liquor and satisfactory fetal heart pattern. In 40 women the uterine contractions were not adequate and hence labor was augmented either with a 25 µg tablet of misoprostol or 2 units of oxytocin in 500 mL of 5% glucose drip at 20 drops/minute i.e. 5mIU/minute which dose was gradually increased upto a maximum of 11 mIU/minute until at least 3 contractions every 10 minutes lasting for 35-45 seconds were established. A low dose sedative and analgesic consisting of 2 mg of diazepam and 6 mg of pentazocine was administered after diluting 1 ampule of each with 7 mL of normal saline and injecting 2 mL slowly intravenously. At the same time injection tramadol 1 mg/kg body weight was injected intramuscularly and injection drotaverine hydrochloride

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(antispasmodic) 40 mg injected intravenously. Drotaverine was repeated 2 hourly . After delivery 125 µg carboprost tromethamine was injected intramuscularly for active management of the third stage of labor.

Labor was monitored by using a partogram. The time of onset of analgesia was recorded. The degree of analgesia was noted on a scale of 0 to 3 (0 – no pain relief, 1 – mild relief, 2 – moderate relief, 3 – good relief). Duration of the three stages of labor, amount of blood loss and mode of delivery were noted. Apgar score of every new born was noted at 1 and 5 minutes.

Results

Both groups were comparble in age, gravidity and locality of residence. The mean age of women in the study group was 23 years while in the control group it was 22.9 years. Mean gestational age was 38.9 weeks in subjects and 39 weeks in controls.

The mean time of onset of analgesia was 17 minutes. Fifty-four percent of the subjects achieved good pain relief, and 32% moderate pain relief (Table 1).

Table 1. Pain relief in the study group.

Pain relief score	Study group (n=100)
3	54
2	32
1	14
0	0

Mean duration of 1st stage of labor was 5 hours 45 minutes and that of active phase 2 hours 45 minutes in the subjects compared to 8 hours 39 minutes and 3 hours 54 minutes respectively in the controls. The mean duration of 2nd stage was 17.46 minutes in subjects and 31 minutes in controls. The mean duration of third stage was 4.94 and minutes in subjects 7.66 minutes in controls (Table 2). All these differences were highly significant (P<0001). The average blood loss was 110 mL in the subjects which was significantly lower than 144.4 mL in the controls (P<0.001).

Ninty-eight percent of the subjects and 94% of the controls delivered normally vaginally, 2% of the subjects and 2% of the controls needed forceps application and 4% of the controls had ventouse extraction. Mean apgar score was above 7 in both the groups at 1 and 5 minutes. High risk cases and women in obstructed labor are refered to us from outside and our cesarean section rate is 30%. But since all the 200 women included in the study were at low risk none of them needed cesarean delivery.

Frequency of side effects observed in the two groups was similar (Table 3). Cervical / vaginal tears occurred in 10% in the study group and 6% in the controls. But the difference was statistically not significant.

Table 2. Durations of the stages of labor.

Mean duration	Study group (n=100) Mean ± SD	Control group (n=100) Mean ± SD	Z test	P value
Active phase of labor (hours)	2.45 ± 0.55	3.54 ± 0.50	15.57	<0.001
Second phase of labor (minutes)	17.46 ± 5.06	31.6 ± 5.96	17.54	<0.001
Third phase of labor (minutes)	4.94 ± 1.43	7.66 ± 2.64	9.64	< 0.001

Tale 3. Side effects and complications.

Maternal morbidity	Study group (n=100) Number	Control group (n=100)
Tachycardia (>100/minute)	4	6
Nausea	4	5
Vomiting	6	4
Diarrhoea	6	1
Drowsiness	4	-
Cervical / vaginal tears	10	6

None of the differences is statistically significant.

Discussion

Excellent pain relief was observed in 54% in the study group Prasertsawat et al [1] observed excellent pain relief in labor in 24.50% and Suvonnakote et al [2] in 40%.

In the present study the mean time for onset of analgesia was 17 minutes while Husslein et al [3] reported that analgesic effect was observed after 10 minutes. Li and Weng [4] observed analgesic effect in 26.10 minutes.

The mean duration of 1st stage of labor was 5 hours 45 minutes in the study group which was comparable to 5 hours reported by Golan et al [5]. Suvonnakote et al [2], and Sarkar and Mukhopadhaya [6] reported rapid progression of labor in women receiving tramadol.

The mean duration of 2nd stage in the present study was 17.46 minutes. Golano et al [5] reported the duration of second stage to be 17 minutes while Daftary et al [7] reported it to be 26 minutes.

The mean duration of the 3rd stage was 4.94 minutes in the subjects which was comparable to 4.6 minutes reported by Young et al [8] which and Daftary et al [7].

The mean blood loss in the study group was 110 mL as compared to 135 mL reported by Reddy and Carry [9].

In our study 1 and 5 minute apgar scores were 8 and 9 respectively. Bajaj et al [10] reported an apgar score of more than 8 at 1 minute in all neonates of the tramadol group.

Minor side effects and complications were observed in our study (Table 4). Suvonnakote et al [2] and Prasertsawat et al [1] reported minimal side effects in women receiving tramadol.

Conclusion

Thus programing of labor is simple, easy and effective method for painless and safe delivery. The analgesia produced is quite effective and overall duration of labor is significantly reduced. Blood loss in third stage is also significantly reduced. Maternal side effects are minor without any fetal or neonatal respiratory depression.

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