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A clinical study of Programmed labour and it's outcome

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ABSTRACT

Human parturition has been termed "labour" in recognition of hard work that parturient as well as the uterine myometrium has to perform in order to deliver the fetus. Programmed labour protocol is developed to hasten the labour process and to reduce the pain of labour for better obstetric and neonatal outcome. Objectives :To study the effect of active management of labour on duration of labour.To study the effect of pain relief in labour with synergistic use of analgesics and anti spasmodic.To evaluate progress of labour with the use of partogram. Methodology:The study included 100 normal pregnant women in labour,both primi and multigravida,selected and randomly allocated as cases and controls.They were subjected to active management of labour which was monitored by partogram.The cases were provided with good analgesia during labour. Results:Total duration of labour was 3.4hrs in study group,as compared to 6.02hrs in control group.62% of cases in study group had moderate pain relief during labour,whereas patients in control group had no pain relief.There was no major maternal morbidity and no respiratory depression in the neonates. Conclusions:Overall duration of labour is significantly reduced and analgesia produced is quite effective.Side effects are minor in the mother and the fetus.

Introduction

Many decades ago,an astute observer and clinical teacher made the following statement that has held true."No amount of prenatal care can compensate for poor care at the time of delivery,but good care at the time of delivery can often compensate for lack of prenatal care and can be the most potent single factor for good and bad obstetrics"(Noram F, 1935). O'Driscoll et al 1969 at Dublin ,Ireland proposed and practiced the policy of active management during labour and observed a total reduction in the duration of labour,without causing any adverse effects on the mother or fetus.It involved active management of labour in the form of amniotomy once the patient entered active phase of labour, judicious use of prostaglandins or oxytocin. The threshold for oxytocin induced uterine contractions is reduced with pregnancy duration ,in the presence of high estrogen levels and in patients already in labour. Oxytocin helps to achieve effective uterine contraction sufficient to produce cervical changes and fetal descent,at the sametime avoids hyperstimulation and fetal distress (Dr.Arul Kumaran).

Drotaverine is an unique smooth muscle relaxant which acts by inhibiting phosphodiesterase enzyme,helps cervical dilatation during active phase of labour.

Tramadol is a synthetic codeine analogue with weak opiod receptor agonistic activity.It inhibits uptake of norepinephrine and serotonin. It has low risk of respiratory or CNS side effects and does not cause respiratory depression in neonate(Sarkar B Mukhopadhya).

Pentazocine is a potent analgesic and has mild sedative properties. It may cause respiratory depression and transient apnoea of newborn. Diazepam is long acting Benzodiazepine derivative, used along with pentazocine for analgesia and sedation(Charles Flowers et al).The main limiting factor is loss of beat to beat variability , but not found to be significant with the dose of 2mg. Pain relief with synergistic use of analgesics and antispasmodics allayed anxiety and maintains placental circulation.This prevented fetal hypoxia and depression at birth. It also prevented maternal hyperventilation, undue muscular efforts which exhaust mother, ensured periods of restful sleep. Pain relief favoured cervical dilatation resulting in labour of shorter duration, less traumatic and required less obstetric interventions. Shorter labours were associated with less incidence of intrapartum infection. Usage of partogram helped the clinician for detecting early dystocia, for assessing outcome of remedial measures taken, for facilitating planning of timely obstetric intervention.It was found that the incidence of operative vaginal delivery declined from 23.8 to 18.9% and incidence of LSCS declined to 4%(Friedman E A). The concept of active management of IIIrd stage of labour was formulated by WHO in 1989.Routine use of oxytocin in IIIrd stage minimized blood loss by 30-40%.Active management of IIIrd stage is associated with meaningful reduction in PPH, postpartum anaemia, need for blood transfusion in the puerperium,reduced risk of prolonged 3rd stage.

Material and methods:

The present study was conducted in the department of Obstetrics, Government General Hospital, attached to Kurnool Medical College,Kurnool during 2007- 2009. It is based on the indigenous protocol devised by Dr. S. N. Daftary and his team.100 normal pregnant women in labour were selected and randomly allocated as cases and controls, after matching for age,parity and socioeconomic class. Booked or unbooked low-risk pregnant women at term gestation in labour, with vertex presentation were selected randomly. They were in the age group of 20-30yrs,had no known medical or obstetric complications, no clinical evidence of CPD. They were included in the study, once they entered active phase of labour, defined as three or more contractions in 10min,each lasting for 35-45

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seconds, cervical dilatation 3-4cm and well effaced cervix. The following protocol was used in the study.

1. An IV infusion of RL was started @20drops/min.

2. In the presence of inadequate uterine contractions, amniotomy was performed, colour of liquor was observed, 2.5units of oxytocin was added to the RL infusion, to establish effective uterine contractions.

3. The pain score was noted as 'Score-1' for mild and bearable pains; 'Score 2' for moderate pains, patient is desirious of pain relief and 'Score 3' for severe unbearable pain, patient demands pain relief .Injection Tramadol 1mg/kg body weight intramuscularly. Injection Drotaverine was given 40mg I/V and was repeated 2nd hourly,if necessary.

4. A low dose sedative and analgesic consisting of 2mg of Diazepam and 6mg of Pentazocin was administered,after diluting 1 amp of each with 7ml of normal saline and injecting 2 ml slow IV.

7. Progress of labour was maintained on partogram, charting the maternal and fetal parameters every half an hour .Cervical dilatation and descent of the fetal head were documented periodically.

8. Inj.Oxytocin 10 units,diluted in 10ml normal saline, was injected in to the umbilical vessels after the delivery of baby for the purpose of active management of IIIrd stage of labour.

9. Pain relief scores were recorded after delivery as' Score 0' for no relief, 'score 1' for mild relief, 'Score 2' for substantial relief,'Score 3' for total relief.Patient was commited to deliver within 12hrs. Control group was managed with Oxytocin and ARM.None of the drugs used for analgesia were administered for the control group. Cases and controls were evaluated in the form of duration of active phase of labour,2nd stage and 3rd stage. Rate of cervical dilatation , pain score, amount of blood loss and mode of delivery were also assessed.

Results

All the patients in the case group and control group were in the age group of 21-30yrs.They all belonged to class IV of socioeconomic status, which conforms the hospital's average.74% of cases in study group had duration of labour <5hrs as against 18% of controls.22% of cases in study group had duration of labour 5.1-7 hrs as against 56% of controls.All cases in the study group delivered before 7hrs , whereas 26% of controls delivered after 7hrs(Table 1).

Table.1 Duration of labour

Time(hrs)	Study group	Controls
<5	37(74%)	9(18%)
5.1-6	10(20%)	12(24%)
6.1-7	1(2%)	16(32%)
7-8	-	13(26%)

All cases in the study group had cervical dilatation faster than 1cm/hr, while 20% of controls had cervical dilatation of <1 cm/hr.52% cases in the study group and 72% of the controls had dilatation in the range of 1.1-2 cm/hr. 44% of the cases in the study group had dilatation of 2.1-4cm/hr.Only 8% of the control group had dilatation of 2.1-3 cm/hr.Hence, faster overall cervical dilatation in the study group contributed to a total reduction in the duration of labour, projecting the major benefit of pain relief during labour. A considerable reduction in duration of all stages of labour ,especially the active phase, was noted in the control group. (3.4 hrs in study Vs 6.02 hrs in controls). Pain relief scores were compared in both the groups.66% of cases in the study group had moderate relief of pain and about 8% had complete relief.26% of cases had mild relief of pain. None of the cases of control group had relief of pain during labour(Table 2).

Table 2.Pain relief scores

Pain relief score	Study	Control
0(No relief)	Nil	50
1(Mild relief)	13(26%)	-
2(Moderate relief)	31(62%)	-
3(Complete relief)	04(8%)	-

Mode of delivery was observed in both the groups.90% of cases in the study group and 98% in the control group had normal delivery. 6% of cases in the study group had outlet forceps delivery, out of which 2 were primigravidae. The indication for forceps delivery was poor maternal efforts in all the cases. The bearing down efforts, though diminished, were not significantly interfered with, as only 3 cases in the study group had to be assisted. 2 cases (4%) of study group underwent emergency LSCS, the indication being,arrest of descent(due to short cord) in one case and relative CPD in the other. There were no major complications in any of the patients in the study or control group. 3 cases in the study group needed assistance of forceps and one baby had mild birth asphyxia due to cord round the neck.Most common side effects due to the protocol, observed in the study group were nausea,vomiting and drowsiness.All the side effects were minor and subsided immediately after delivery, except drowsiness, which continued only in few cases upto 10-12 hrs.All the drugs were used at their minimum dose recommended by standard pharmacological text books(Goodman & Gilmans). Apgar scores in control group did not differ significantly with that in the study group, which indicates that the drugs used in the protocol do not have any depressant effect on the neonate.All babies had apgar score of >5 at birth and >8 at 5 minutes(Table 3).

Table 3.Comparison of apgar scores

Groups	1 minute			5 minutes		
	<5	5-8	>8	<5	5-8	>8
Study	Nil	14(28%)	36(72%)	Nil	Nil	50(100%)
Control	Nil	12(24%)	38(76%)	Nil	Nil	50(100%)

4% of babies in the study group had poor sucking reflex, 2% had drowsiness, probably due to effects of opiods and sedatives, which act synergistically . 2 babies in the study group and one baby in control group had mild birth asphyxia and all recovered within 5 minutes.This protocol, despite use of multiple drugs, was relatively safe in healthy term babies, since all the drug used were in minimum dos-

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es recommended.

Discussion

The present study is compared with other studies- The Tramadol

group (Dr.Sarkar), Programmed labour (Dr.Daftary). The total duration of labour was decreased in all the studies. All the patients irrespective of parity delivered within 8 hours, which fulfilled the principle of active management of labour.In our study, pain relief wasless compared to the other studies, as the analgesic Ketamine used in the those studies in second stage, contributed to significant pain relief.The percentage of normal deliveries and instrumental deliveries was comparable to other studies. Apgar scores at 1 min and 5 min were compared in different studies. Apgar scores at 1 min were better in programmed labour group compared to Tramadol group.In all the studies, 5 min Apgar score was normal except that 1% of babies in study of Daftary et al had 5 min Apgar <5. The Apgar score of >8 at 5 min was seen in 100% babies in our study, which is desired, compared to other studies(96.5% and 90%).This may be due to exclusion of Ketamine for pain relief during second stage in our study. The common side effects of nausea and vomiting were noted in 24% , tachycardia in 8% of cases in the present study group.Desirable effects of shortening of labour and pain relief is much more, compared to minimal side effects that are encountered.So, the present study advocates its use in the management of labour.

Conclusion:

The programmed labour protocol without Ketamine has desirable effects, needs no supervision by an anaesthetist or neonatologist . So, it can be administered, monitored by Obstetrician.Overall duration of labour is significantly reduced and analgesia produced is quite effective. Side effects are minor in mother and fetus. It is recommended to practice Programmed labour, as it is simple, easy, inexpensive and effective.

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