FETO-MATERNAL OUTCOME;
COMPARISON WHILE USING EPIDURAL ANALGESIA VERSUS PARENTERAL OPIOID DERIVATIVES IN LABOUR

ORIGINAL
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ABSTRACT… Objective: To compare the effects of epidural analgesia and parenteral nalbuphine in labouring women with term pregnancies on feto-maternal outcome. **Study Design:** Randomized controlled trial **Setting:** It was carried out in the Labour Room, Nishtar Hospital, Multan **Period:** From June 2009 to December 2009. **Material and methods:** A total of 60 patients were included in the study. Patients were divided into two groups, having 30 patients in each group. **Results:** In group-A, pain control was much better and satisfactory (VAS=00-1), duration of labour was slightly prolonged and instrumental delivery was more common. Low Apgar score and birth asphyxia were seen in group-B. No baby developed RDS in both groups. **Conclusions:** Feto-maternal outcome is much better in women having epidural analgesia with bupivacaine as compared to women having intramascular nalbuphine.

Key words: Analgesia, Labour, Epidural, Bupivacaine.

INTRODUCTION

Labour is a process of child birth which starts with onset of regular, painful, effective uterine contractions leading to cervical effacement, dilatation and ends with the delivery of the baby and placenta. Although it is considered as a normal physiological process, it can produce significant pain requiring appropriate pain management[1].

International association for study of pain has defined the pain as an unpleasant sensory and emotional expression associated with actual or potential tissue damage or described as a combination of severe discomfort, fear, autonomic changes, reflex activity and suffering[2]. A painful labour also had detrimental effects on the mother and the fetus[3].

Ideal labour analgesia technique should dramatically reduce the pain of labour, while allowing the parturient to actively participate in birthing experience and have minimal adverse effects on the fetus and progress of labour[4].

Higher concentrations of nitrous oxide improve the quality of analgesia but produce unconsciousness in significant number[5]. Parenteral opioid derivatives are easy to administer and provide good pain relief but are associated with longer onset time of analgesia and low Apgar scores[6]. Newborn exposed to maternal nalbuphine should be monitored for respiratory depression, apnoea, bradycardia and arrhythmias[7]. Neuraxial analgesia techniques are most effective and least depressant treatment for labour pain according to opinion of American College of Obstetrics and Gynaecology[8]. Epidural analgesia is considered as gold standard analgesia in labour. It offers best effectiveness and safety ratio. Although it prolongs the second stage of labour and increases the rate of instrumental delivery, yet its advantages of pain free labour, better psychological outcome and no significant complications outweighs these drawbacks[9].

Non-pharmacological techniques include self hypnosis, accupuncture and transcutaneous electrical nerve stimulation (TENS) but it takes up to 40 minutes to become effective[10,11]. Nalbuphine, a mixed agonist /antagonist narcotics analgesic, has the place in clinical practice. Epidural analgesia is very popular but not always accessible; nalbuphine is the option which is effective in analgesia and has minimal side effects[12]. It causes less nausea, vomiting and less long standing neonatal respiratory depression as compared to other opioid derivatives[11].

OBJECTIVE

To compare the effects of epidural analgesia and parenteral nalbuphine in labouring women with term pregnancies on feto-maternal outcome.

MATERIAL AND METHODS

This Randomized controlled trial was carried out in the Labor Room, Nishtar Hospital, Multan from June 2009 to December 2009. A total of 60 patients were included in the study. Patients were divided into two groups, having 30 patients in each group. Group-A was given epidural analgesia with 0.25% - 0.5% bupivacaine and group-B was given intramuscular nalbuphine according to the two regimens in active stage. Pain intensity was evaluated in both groups using visual analogue scale (VAS)13. Mode of delivery and neonatal outcome in terms of Apgar score, frequency of occurrence of birth asphyxia and RDS were recorded.

RESULTS

Epidural group had age 22 to 36 years, while nalbuphine group had age 24 to 36 years. In group-A there were 18 (30%) primigravidas and 12 (20%) multigravidas, while in group-B, primigravidas were 14 (23.3%) and multigravidas were 16 (26.7%).

Maternal outcome is shown in table-I. In group-A, the VAS of primigravida was 0-2 and that of multigravida was 0-1, whereas in group-B, the VAS of primigravida was 5-6 and that of multigravida was 3-4. VAS was significantly better in group-A in both primigravidas and multigravidas as compared to that of group-B (P <0.05).

Number of primigravidas who delivered by NVD in group-A was 16 (53%) and that of multigravidas was 26%. In group-B, the number of primigravidas who delivered by NVD was 11 (36.6%) and that of multigravida was 15 (50%). So the percentage of women who undergone normal vaginal delivery was significantly more in group-B as compared to group-A.

Number of primigravida who underwent instrumental vaginal delivery was 3 (10%) while that of multigravida was 1 (3.3%) in group-A. in group-B, this number of primigravida was 2(6.6%), no instrumental delivery occurred in multigravidas. Percentage of women having instrumental delivery was higher (P>0.05) in group-A as compared to group-B. In group-A, one primigravida and one multigravida undergone caesarean section. So in both groups no difference observed in number of caesarean sections performed. Common indications for caesarean sections performed were failed progress of labour and fetal distress.

Table-I. Comparison of maternal outcome between two groups

Types of analgesia	Pain relief by VAS	Mode of delivery		
Group A	0-2	79.6%	13.3%	6.6%
Group B	6-7	86.6%	6.65%	6.6%

Fetal outcome is shown in table-II. At 1 minute in group-A, Apgar counted was in the range of 5-8 in 24 (80%) babies while in 6 (20%) babies it was in the range of 5-6. In group-B, it was in the range of 4-7 in 20 (60%) babies, 4-5 in 8 (26.4%) babies and 3-4 2 (6.6%) babies. At 5 minutes after delivery in group-A it was 9-10 in 26 (83%) while in 4 (13.2%) it was 7-8 while in group-B it was in the range of 8-9 in 21 (70%), in 8 (25.4%) it was 6-7 and was 3 in (3.3%) baby. So in group-A, Apgar score was better (P>0.05) as compared to babies in group-B.

Table-II. Comparison of fetal outcome between two groups

Types of analgesia	Apgar score			
	1 min (aver)	5 min (aver)	Birth asphyxia	NVD
Group-A	5-8	7-10	-	-
Group-B	4-7	6-9	-	-

As babies were followed for 24 hours, in group-B, only o1 (3.3%) baby developed birth asphyxia. So birth asphyxia was common in group-B as compared to group-A. No baby developed respiratory distress.

DISCUSSION

Pain of child birth is likely to be the most severe pain that a woman experiences during her life time[3]. Several studies have been done on analgesic options available for patients during labour. Selection of appropriate technique must be individualized. Patient's preferences,

tempered by sound medical judgement, should guide the selection of appropriate modality for pain control during labour[14]. The provision of effective analgesia reduces the inhibitory effect of endogenous maternal catecholamines on uterine contractility, also attenuates maternal acidosis and permits the mother to tolerate augmentation with oxytocin[15]. Epidural analgesia with local anaesthesia solution is known to have beneficial effect on patient's outcome during labour period. Many women especially multiparous, rate the pain as very severe and intolerable[16]. Among them systemic opioid agents are frequently prescribed alternative to epidural analgesia and nalbuphine (opioid agonist – antagonist) produces less nausea and vomiting and less long lasting neonatal respiratory depression[12].

The results of present study were correlated with work done by others. Halpern et al performed a meta-analysis of 10 trials randomizing women to epidural versus parenteral opioid analgesia and concluded that epidural analgesia provides much better pain relief and is associated with much less maternal dissatisfaction than parenteral opioids[17]. In present study, VAS in group-A (epidural analgesia) was much better and satisfactory (0-1) as compared to group-B (nalbuphine). Analgesic method did not affect the incidence of fetal heart rate abnormalities, intrapartum meconium or severe asphyxia. Analgesic method did not affect fetal oxygenation. However, neonates whose mother received parenteral opioids require more naloxone and have lower 1 and 5 minute Apgar score than neonates whose mother received epidural analgesia[17]. In our present study only one baby got birth asphyxia and that was in group-B (nalbuphine).

Zhang et al performed a quantitative review of 4 randomized trials and 4 retrospective studies. The randomized trials showed no significant increase in the incidence of over all caesarean delivery for dystocia (OR 6.50, 95% CI 3.37-12.50)[18]. In my present study rate of caesarean section was similar in both groups, so that was not affected by type of analgesia used. In Halpern's meta analysis of randomized studies, epidural patients were more likely to have instrumental vaginal deliveries; however, they were no more likely to have instrumental vaginal deliveries for dystocia[17]. Similarly in present study, instrumental delivery rate was seen more in epidural group than in nalbuphine group.

Zhang et al examined 4 randomized trials and 4 retrospective studies. The randomized trials showed no significant increase in the incidence of instrumental delivery. The observational trials showed a significant increase in the incidence of instrumental delivery[18]. They concluded that epidural labour analgesia does not affect the incidence of obstetrically indicated instrumental vaginal delivery[19].

In the meta-analysis; Halpern et al concluded that analgesic method does not affect fetal oxygenation. However, neonates whose mothers received parenteral opioids require more naloxone and have lower 1 and 5 minute Apgar scores than neonate whose mothers received epidural analgesia[20].

Stephen did a study to review the effects of epidural versus parenteral opioid analgesia on caesarean delivery rates[14]. In their study neonatal outcome was described. There was no difference in the incidence of fetal distress or intrapartum passage of meconium between the two groups. Significantly fewer infants were born with 1 and 5 minute Apgar scores of less than 7 in epidural group compared with parenteral opioids group. In addition, naloxone was used less often in the newborn of patients receiving epidural analgesia. Only 4 infants (2 from each group) had severe asphyxia indicated by umbilical artery pH of less than 6.99[21]. There were no reports of serious neonatal complications related to either analgesic method. Similarly in my present study, Apgar scores in epidural group were better than in nalbuphine group. Only one baby got birth asphyxia in nalbuphine group and no baby developed respiratory distress in both groups.

CONCLUSIONS

Feto-maternal outcome is much better in women having epidural analgesia with bupivacaine as compared to women having intramascular nalbuphine.

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