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Original Research Article

Efficacy of Bupivacaine and Fentanyl V/s Bupivacaine and Butorphanol in postoperative pain relief

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Abstract: Severe labour pains may adversely affect both mother and fetus. Postoperative pain leads to multiple physiological and psychological phenomenons. Epidural analgesia with combination of local anesthetics and opioids provides better pain relief than local anesthetics alone in the postoperative period. The objectives is to evaluate the efficacy of addition of opioids to local anesthetics for postoperative pain relief. Hundred primigravida parturients in the age group of 18-26 years belonging to ASA grade 1 and 2, all being primigravidae were randomly selected and divided into 2 groups of 50 each. Group 1 parturients were given 0.1% Bupivacaine and Fentanyl 0.0002%, Group -2 parturients were given 0.1% Bupivacaine with 1mg Butorphanol by lumbar epidural technique. The mean onset and duration of analgesia with 1st dose in group 2 [92.16 ± 14.24] is more than that seen in the group 1 [68.68 ± 9.19]. The quality of analgesia in group 1 [1.42± 1.90] is more than group 2 (0.34 ± 1.50). A combination of 0.1% Bupivacaine with 1mg Butorphanol provides excellent pain relief, prolonged duration of action in postoperative pain relief when compared to 0.1% bupivacaine with 0.0002% fentanyl.
Keywords: Bupivacaine, Fentanyl, Butorphanol, Postoperative pain

INTRODUCTION

Pain is a subjective experience with sensory and emotional components that are inextricably linked to each other. Neuraxial opioids are frequently used in combination with local anaesthetics which allows lower dose of local anaesthetics [1]. Epidural analgesia using local anesthetic agent is effective and economical way of providing postoperative analgesia.

Butorphanol is a lipophilic opioid agonist-antagonist analgesic with a published affinity for opioid receptors in vitro of 1:4:25 [2]. Abboud *et al.;* have reported a dose-dependent increase in the duration of analgesia provided by epidural butorphanol for relief of post-cesarean section pain [3]. Fentanyl, a highly lipid soluble, synthetic opioid acts on the μ-receptors is more efficient than morphine. It has a rapid onset and short duration of action [4, 5]. Bupivacaine, an amide amino group of local anaesthetics scored as a better agent of choice in pain relief of labour.

The present study was undertaken to compare the safety and efficacy of anesthesia and analgesia of bupivacaine-butorphanol mixture versus bupivacaine-fentanyl mixture in epidural labour analgesia.

MATERIALS AND METHODS

The present study was carried out in Department of Anesthesiology, MNR Medical College and Hospital, Sangareddy. The study was undertaken to compare the effectiveness of Bupivacaine and Fentanyl v/s Bupivacaine and Butorphanol in relieving pain during labor. A total 100 parturients were included between 18-26 years of age and their deliveries were expected to be normal vaginal deliveries. All Parturients were divided into two groups randomly.

Group-1: Includes 50 parturients and received a combination of Bupivacaine and Fentanyl. The initial bolus dose was 0.1% Bupivacaine 10ml with 2mcg/ml [20mcg] of Fentanyl and top up doses were 0.1% Bupivacaine with Fentanyl 2mcg/ml [10ml].

Group-2: Includes 50 parturients and received a combination of Bupivacaine and Butorphanol. The initial bolus dose was 0.1% Bupivacaine 10ml with

0.01% of Butorphanol [1mg] and top up doses were with 0.1% Bupivacaine [10ml].

RESULTS

Table 1: Showing demographic data of the parturients

S. NO	Parameter	Group-1	Group-2	p-value
1	Primigravida	50 (100%)	50 (100%)	-
2	Age	23.38±2.47	22.48±2.20	Not significant
3	Height	160.07±4.95	160.18±4.82	Not significant
4	Weight	60.48±2.48	60.02± 2.02	Not significant
5	Cervical dilatation (cm)	3.06±0.37	3.08±0.39	Not significant
6	Oxytocic's used	35 (70%)	36 (72%)	Not significant

Table 2: Showing the values of parturients under Group-1

	Mean	Median	Mode	Standard deviation	P - value
Onset of analgesia	8.18	8	9	1.686	<0.0001
Duration of analgesia with first dose	68.68	68.5	75	9.190	<0.0001
Total no. of doses required	4.58	4	4	0.78	<0.0001
Duration of labour	302.9	309	310	42.92	>0.01
Quality of analgesia (Visual analogue pain scale)	1.42	0.5	0	1.90	>0.01
APGAR Score					
1 Min	7.36	8	8	1.10	>0.01
5 Min	7.6	8	8	0.989	>0.01

Table 3: Showing the values of parturients under Group-2

	Mean	Median	Mode	Standard deviation	P - value
Onset of analgesia	12.68	13	13	0.957	<0.0001
Duration of analgesia with first dose	92.16	90.5	76	14.24	<0.0001
Total no. of doses required	2.82	3	3	0.71	<0.0001
Duration of labour	290.1	292.5	321	47.49	>0.01
Quality of analgesia (Visual analogue pain scale)	0.34	0	0	1.50	>0.01
APGAR Score					
1 min	9.36	10	10	1.10	>0.01
5 min	9.6	10	10	0.98	>0.01

DISCUSSION

This study was done to compare the effects of 0.1% Bupivacaine and Fentanyl 0.0002% v/s 0.1% Bupivacaine with 0.01% Butorphanol [1mg] by lumbar epidural technique in producing labour analgesia. Hundred primigravida parturients in the age group of 18-26 years belonging to ASA grade 1 and 2, all being primigravida were randomly selected and divided into 2 groups of 50 each.

In the present study onset of sensory blockade is faster in group 1 when compared to that in the group 2, due to fentanyl high lipid solubility compared to Butorphanol. These findings are correlating with the findings of Reynold *et al.;* [6]. The mean duration of analgesia with 1st dose in group 2 [92.16 ± 14.24] is more than that seen in the group 1 [68.68 ± 9.19]. The duration of analgesia seen in group -1 is comparable with the findings of Reynold *et al.;* and price *et al.;* Group -2 showed results similar to studies done by Hunt *et al.;* [7] and Malik *et al.;* [9].

Quality of analgesia between both groups was assessed by visual analogue scale which was statistically significant. These findings are correlating with Hunt *et al.;* [7], Tank TK [9], and David H Chest nut [10]. In most of them the APGAR scores at 1min were between 7and 8 in both groups except in one neonate in Group -2 who had fetal distress due to cord around the neck during delivery. But the APGAR scores at 5 min were between 9 and 10 indicating lack of clinically relevant respiratory depression and depressed neuro behaviour scores in neonates.

CONCLUSION

With above results it may be concluded that 0.1% Bupivacaine in combination with 1mg Butorphanol during epidural analgesia for labour provides excellent pain relief, prolonged duration of action with simultaneously decreasing the top-ups required, thereby reducing the total local anesthetic requirement compared to 0.1% bupivacaine with 0.0002% fentanyl [20mcg].

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