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Original Article

Efficacy of epidural bupivacaine and fentanyl for labour analgesia

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ABSTRACT:

Background: The goal of labor analgesia is to provide adequate pain relief without causing any maternal and fetal jeopardy. Continuous epidural analgesia is the most versatile and most commonly employed technique. The present study was conducted to assess efficacy of epidural bupivacaine and fentanyl for labour analgesia. **Materials & Methods:** 56 pregnant women primigravida and multigravida (ASA grade II) in the age range of 18 to 45 years were given first loading dose of 10 ml 0.25% plain bupivacaine via epidural catheter followed by continuous epidural infusion of 0.0625% bupivacaine with 2.5 mcg/ml fentanyl @ 12ml/hr. The parturients were assessed for onset and duration of analgesia and VAS. **Results:** 16 were Primigravida and 40 were Multigravida. The difference was significant (P< 0.05). VAS score on 1st stage was 2.95 and in 2nd stage was 3.12. The difference was significant (P< 0.05). Satisfaction score was excellent in 4, good in 50 and poor in 2 cases. The difference was significant (P< 0.05). **Conclusion:** Epidural labour analgesia with low dose bupivacaine with fentanyl given through continuous infusion technique provides good pain relief.

Key words: Epidural labour analgesia, Fentanyl, Bupivacaine

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INTRODUCTION

Labor is a physiologic process but associated with severest form of pain. The goal of labor analgesia is to provide adequate pain relief without causing any maternal and fetal jeopardy.[1] Continuous epidural analgesia is the most versatile and most commonly employed technique, because it can be used for pain relief during labor and for subsequent vaginal delivery as well as analgesia and anesthesia for cesarean section, if necessary.[2]

Various nonpharmacological methods and pharmacological method of providing labor analgesia have been used. Regional analgesia is widely used for providing labor analgesia. Regional techniques present the most flexible, effective, and least depressant options when compared with parenteral and inhalation techniques.[3] Spinal analgesia provides short duration of action. This technique will not be able to provide adequate analgesia for the whole duration of labor. Newer techniques such as combined spinal-epidural, continuous epidural infusions, walking epidurals and patient controlled epidural analgesia (PCEA) are now available.[4]

Bupivacaine is the most commonly used medication administered for epidural analgesia in labour because of its widespread availability, low cost, relatively safe profile. It has a rapid onset and its duration is long lasting.[5] Bupivacaine has also been shown to provide longer lasting analgesia than other local anaesthetics even after sensations return. The addition of opioid to local anaesthetic solution can help treat missed segments, perineal pressure, and maximize efficacy and maternal satisfaction. Fentanyl is a potent opioid and addition in low concentration to Bupivacaine increased its efficacy, safety profile and cost effectiveness.[6] The present study was conducted to assess efficacy of epidural bupivacaine and fentanyl for labour analgesia.

MATERIALS & METHODS

The present study was conducted among 56 pregnant women primigravida and multigravida (ASA grade II) in the age range of 18 to 45 years. All were enrolled after they agreed to participate.

Data such as name, age, gender etc. was recorded. Active labour were given first loading dose of 10 ml 0.25% plain bupivacaine via epidural catheter followed by continuous epidural infusion of 0.0625% bupivacaine with 2.5 mcg/ml fentanyl @ 12ml/hr. The parturients were assessed for onset and duration of analgesia and VAS. Patient satisfaction score was recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution as per gravidity

Type	Number	P value
Primigravida	16	0.01
Multigravida	40	

Table II shows that 16 were Primigravida and 40 were Multigravida. The difference was significant (P< 0.05).

Table II Stage of labour (VAS score)

Stages	Number	P value
1st stage	2.95	0.02
2nd stage	3.12	

Table II shows that VAS score on 1st stage was 2.95 and in 2nd stage was 3.12. The difference was significant (P< 0.05).

Graph I Stage of labour (VAS score)

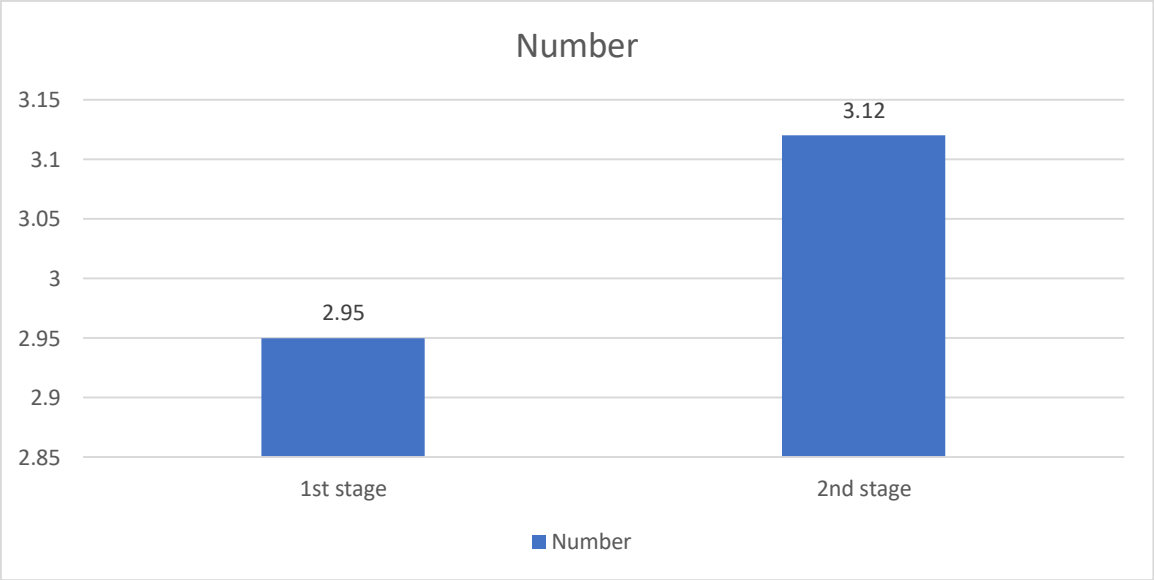

Table III Patients satisfaction score

Satisfaction score	Number	P value
Excellent	4	0.02
Good	50	
Poor	2	

Table III shows that satisfaction score was excellent in 4, good in 50 and poor in 2 cases. The difference was significant (P< 0.05).

DISCUSSION

The pain of childbirth is the most severe pain any women can endure in their lifetime. The pain of the early first stage of labor arises from dilation of the lower uterine segment and cervix.[7] Pain of the late first stage and second stage of labor arises from the descent of the fetus in the birth canal, resulting in distension and tearing of tissues in the vagina and perineum.

Labor pain is excruciating and is a significant contributor to fear, stress, and anxiety.[8] Painful uterine contractions lead to maternal hyperventilation and increased catecholamine concentration resulting in maternal and fetal hypoxemia. Labor pain when unrelieved can have adverse effects on the course of labor as well as on the fetal wellbeing. An effective labor analgesia leads to better maternal and fetal outcome. Relief of pain during labor endeavors to make the journey of labor safe and pleasant for both the mother and baby.[9]

Epidurals have long been associated with increased oxytocin use, increased fetal malposition, increased rates of instrumental and caesarean delivery, and longer labors. Spinal block is cheaper as well as less technically challenging when compared to epidural and combined spinal epidural block. Intrathecal analgesia alone is useful when duration of labor can be reasonably estimated. Opioid combined with a

small dose of local anesthetic provides rapid analgesia and dissipates when no longer needed.[10] The present study was conducted to assess efficacy of f epidural bupivacaine and fentanyl for labour analgesia.

In present study, 16 were Primigravida and 40 were Multigravida. We found that VAS score on 1st stage was 2.95 and in 2nd stage was 3.12. Meister et al. compared epidural analgesia with 0.125% ropivacaine/fentanyl versus 0.125% bupivacaine/fentanyl during obstetric labor. The local anesthetics used were of equal concentration but were not equianalgesic. Minimum local analgesic concentration studies have demonstrated that ropivacaine has only 0.6 the potency of bupivacaine, and therefore, equiconcentration but not equipotent drugs have been used. The concentrations used, 0.125% local anesthetic, are both above their calculated 95% effective doses, and therefore, both would be expected to provide effective analgesia, as demonstrated in the study.[11]

That significantly less motor block was seen in the ropivacaine/fentanyl group is not surprising in view the lower potency of ropivacaine. The authors state that ropivacaine cannot be less potent than bupivacaine as less supplemental analgesia was needed in the ropivacaine group. This simply reflects the longer half-life of ropivacaine compared with bupivacaine, a result of its S-enantiomer form and its greater vasoconstrictor action. The conclusion that the drugs appear to be equipotent at clinically used concentrations only reflects the higher than 95% effective dose concentrations being used.[12,13]

We found that satisfaction score was excellent in 4, good in 50 and poor in 2 cases. Kalra et al[14] compared the efficacy between fentanyl and sufentanil combined with low concentration (0.0625%) of bupivacaine for epidural labor analgesia in laboring women. Fifty full term parturients received an initial bolus dose of a 10 ml solution containing 0.125% bupivacaine. The patients were randomly divided into two: group F received 0.0625% bupivacaine with 2.5 mcg/ml fentanyl and group S received 0.0625% bupivacaine with 0.25 mcg/ml sufentanil. Verbal analogue pain scores, need of supplementary/rescue boluses dose of bupivacaine consumed, mode of delivery, maternal satisfaction, and neonatal Apgar scores were recorded. No significant difference was observed between both groups. Both the groups provided equivalent labor analgesia and maternal satisfaction. The chances of cesarean delivery were also not increased in any group. No difference in the cephalad extent of sensory analgesia, motor block or neonatal Apgar score were observed. Although mean pain scores throughout the labor and delivery were similar in both groups, more patients in fentanyl group required supplementary boluses though not statistically significant.

CONCLUSION

Authors found that epidural labour analgesia with low dose bupivacaine with fentanyl given through continuous infusion technique provides good pain relief.

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