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Original Research Paper

CLINICAL STUDY OF THE EFFICTIVENESS OF EPIDURAL LABOUR ANALGESIA FOR VAGINAL DELIVERY WITH 0.125% BUPIVACAINE VERSUS 0.125% LEVO-BUPIVACAINE

Anaesthesiology

KEYWORDS: Epidural analgesia,obstetric analgesia,bupivacaine levo-bupivacaine

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ABSTRACT

BACKGROUND:We compare the clinical effectiveness of lumbar epidural analgesia for vaginal delivery with 0.125%bupivacaine with 0.125% levo-bupivacaine using single shot technique. METHODOLOGY: Sixty parturients admitted to asram hospital,Eluru for vaginal delivery and who were in active labour were randomly divided into two groups of 30 each. Group I received 10 ml of 0.0125% bupivacaine. Group II received 10ml of 0.125% levo-bupivacaine. The two groups were compared with respect to onset and duration of analgesia, maximum level of analgesia, pain scores ,haemodynamic parameters ,motor block, side effects ,mode of delivery and neonatal outcome. RESULTS: The duration of analgesia was (122 minutes) compared to (115 minutes) in group II which is almost similar. There were no significant cardiovascular changes, and any other side effects. CONCLUSION: It was concluded that single shot lumbar epidural analgesia with 10ml of 0.125% levo-bupivacaine and 0.125% bupivacaine are of similar potency in normal vaginal deliveries, without producing any adverse effects on the mother or the neonate

INTRODUCTION:

Pain in labour is an extremely agonizing experience for most women. Various methods have been tried since time immemorial to alleviate this pain. However, this endeavour did not receivce much support till the late 19th century,with analgesia for labour being opposed for both medical and religious reasons.It was also believed that pain had a biological value and attempts to abolish it would be detrimental to both the mother and foetus. However,the recognition of various physiological disturbance that can occur due to unrelieved labour pain brought about a change in this thinking.In view of this,the concept of labour analgesia came to be widely accepted.

Epidural techniques

Among all the techniques available,the epidural method comes closest to the ideal in being effective in alleviating labour pain and in being safe for both the mother and the foetus.

In view of this,the present study was undertaken to compare the clinical effectiveness of a 0.125% bupivacaine and 0.125% levo-bupivacainein labour analgesia.

METHODOLOGY:

This comparative clinical study of epidural labour analgesia for vaginal delivery with 0.125% bupivacaine versus 0.125% levo-bupivacaine using single shot lumbar epidural technique was conducted on 60 parturients in asram hospital attached to Alluri Seetharama Raju Academy of Medical Science after obtaining permission from the Ethical Committee. Only those parturients who fulfilled the following criteria were chosen for the study.

Exclusion Criteria :

1)ASA Physical status III or IV
2)Multiple or preterm gestation
3)Allergy to any study drug
4)Patients unwilling for labour analgesia
5)Cervical Dilation >6cm

The study population consisted of 60 parturients.They were divided into 2 groups of 30 each.

Group I received 10 ml of 0.125% bupivacaine

Group II received 10ml of 0.125% levo-bupivacaine.

RESULTS:

Onset Of Analgesia

DISCUSSION

Bupivacaine still remains the most often used local anaesthetic in labour analgesia. Various workers have used varying concentrations of bupivacaine. Undiluted bupivacaine (0.5%) was popular for initiation and maintainance of labour analgesia. However, it caused dense motor blockade and interference with maternal awareness of contractions. Despite providing excellent pain relief in labour, epidural analgesia using local anaesthetics alone produces motor block in upto 85% of patients , reduces maternal satisfaction with analgesia and is assoiated with prolonged second stage and an increased incidence of instrumental delivery. In an attempt to reduce the adverse effects of high concentrations of bupivacaine, adjuvants like fentanyl were added so as to decrease the maintenance concentration of bupivacaine from 0.5% to as low as 0.0625% .

Workers using 0.125% bupivacaine have noticed:

a) Avoidance of significant motor blockade(Bleyaert).
b) Duration of second stage of labour was not prolonged (Bleyaert, Khan)
c) No difference in mode of delivery (Guisasola).

Most workers have commenced epidural analgesia when the cervical dilation was 3cm or more.In the present study,the epidural analgesia was instituted with cervical dilation between 4-6cm.

All parturients were preloaded with 500ml with ringer's lactate solution before establishing the block,in order to decrease the incidence of hypotension following sympathetic blockade.

Onset of Analgesia:

In the present study,the mean onset of analgesia time was 6-8 minutes (2-13 minutes) in group I.this is similar to average onset of analgesia time in group II in the present study was 6.5 minutes(2-14 minutes).thisconcures with the study of El Moutaz et al.who observed that the onset time was approximately 13 minutes.

Level of sensory blockade:

The upper level of sensory block was assessed by using loss of sensation to pinprick in the midclavicular line,bilaterally from the nipple downwards.Adequate epidural analgesia in the first stage of labour requires afferent sympathetic block to the level of tenth thoracic dermatome.In the present study,the upper level of sensory block in most of the parturients was t8 in group I and II.this finding was comparable to study done by wang LZ et al,in 2010 who concluded that using pcea ,same concentration of bupivacaine,ropivacaine and levo-bupivacaine with sufentanil produce similar sensory blockade.

Duration of Analgesia :

The onset of analgesia till the return of painful contractions or till the regression of sensory level below T10.In the present study,the mean duration of analgesia in group I was 80 minutes(53-122 minutes).This is similar to the observations of Bleyaert et al.who found the mean duration of analgesia after the first dose to be 58+/-15 minutes and

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cellano et al.(55+/-7 minutes).In group II,the average duration was 81 minutes(54-115 minutes)which was almost similar to group I.

Cardiovascular status assessment:

Cardiovascular assessment include monitoring of maternal heart rate and blood pressure.The values were recorded prior to the institution of the epidural block(i.e. baseline value) and then at every 2 minutes interval for next 20minutes,at the 30th minute and every 15 minutes thereafter till delivery or the termination of the study.

In the current study,hypotension has been taken as SBP<90mm Hg.No parturient in either group experienced any hypotension.Using continuous epidural analgesia with 0.125% bupivacaine,Bleyaert et al.observed the incidence of hypotension to be 10%.Owen et al.found hypotension in 25%of parturientsreceiving bupivacaine,which respond well to treatment.There was no incidence of bradycardia in present study.The maternal heart rate ranged from 79+/-12 to 98+/-13 beats per minute as observed by finegold et al.This concours with the present study where the two groups were comparable as regards maternal heart rate.

Mode Of Delivery:

The mode of delivery was spontaneous vaginal in most of theparturients i.e. 76.7% in group I 80% in group II.In the present study,23.3% of parturients in group I and 20% of parturients in group II underwent instrumental delivery in the form of outlet forceps application.Nome of the parturients needed LSCS.This concurs with the study conducted byBelin et al.in 2007 who concluded that bupivacaine,ropivacaine and Levo-bupivacaine all confer adequate labour epidural analgesia with no significant influence on the mode of delivery,duration of labour or neonatal outcome.

CONCLUSION:

We conclude that both 0.125% bupivacaine and 0.125% levo bupivacaine confer adequate and safe labour analgesia with no significant influence on the mode of delivery,haemodynamic changes,duration of labour,or neonatal outcome.

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TABLE 1: TIME OF ONSET OF ANALGESIA

	Group-I		Group-II	
Time of onset of analgesia in minutes	cases	%	cases	%
1-3	5	16.7	6	20
4-6	7	23.3	9	30
7-9	14	46.7	11	36.6
10-12	3	10.0	2	6.6
>12	1	3.3	2	6.6
total	30	100	30	100

Majority of parturients in group 1 that is 46.7% and 36.6% of parturients in group 2 achieved onset in 7-9 min

TABLE - 2

MAX LEVEL OF ANALGESIA	GROUP-1 CASES %	GROUP - 1 %	GROUP – 2 CASES	GROUP – 2 %	P	
T8	12	40.0	13	43.3	> 0.05	
T9	7	23.3	8	26.7	>0.05	
T10	11	36.7	9	30	>0.05	
T11	-	-	-	-	-	
T12	-	-	-	-	-	
TOTAL	30	100	30	100		

Majority of the parturients in both groups achieved a level of T8 i.e. 40% in group I 43.3% in group II.This difference between the two groups was statistically insignificant (p>0.05) by t-test.The minimum level achieved was T10 by 36.7% of parturients in group I 30% of parturients in group II.

TABLE - 3

Maternal pulse rate (beats/min)

	Group-I	Group-II
BASAL	90.23	88.7
5th minute	90.8	88.6
10th minute	90.8	86.8
15th minute	90.3	90.7
30th minute	91.1	89.8
45th minute	91.1	89.7
60th minute	90.7	91.4
>60 minutes	95.3	98.9
Avg	91.3	90.6
S.D	1.54	3.41

Two groups were comparable with regard to cardiovascular status the mean pulse rate was 91.3 +/- 1.54 beats per minute in group I and 90.6 +/- 3.41 beats per minute in group II.

Maternal mean arterial pressure (mm Hg)

	Group-I	Group-II
Basal	90.7	94.1
5th minute	92	94.6
10th minute	92.6	96.6
15th minute	93	97.3
30th minute	95	97.5
45th minute	95.5	94.3
60th minute	95.2	98.5
>60 minutes	99.2	101.6
Avg	94.15	96.82
S.D	2.47	2.36