Original Research Article

Comparative study of intrathecal isobaric levobupivacaine 0.5% with isobaric ropivacaine 0.5% for infra umbilical surgeries

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Abstract

Objective: To compare the block characteristics and haemodynamic stability of intrathecal isobaric levobupivacaine 0.5% with isobaric ropivacaine 0.5% for infra umbilical surgeries under spinal anaesthesia. **Method:** 100 patients of ASAI and ASAII coming for elective infra umbilical surgeries under spinal anaesthesia were randomly allocated to two groups with 50 patients in each group. Group L received isobaric levobupivacaine 0.5% and Group R received isobaric ropivacaine 0.5%. Sensory and motor characteristics were assessed by pin prick and modified Bromage scale respectively an observed haemodynamics were recorded. **Results:** The onset of sensory and motor block was faster in Group L compared to the Group R. The duration of sensory and motor block was found to be significantly long in Group L compared to Group R. **Conclusion:** The onset of sensory and motor block was shorter and duration of sensory and motor block was longer in levobupivacaine group and side effects like hypotension, bradycardia, same compared to the ropivacaine group, The isobaric levobupivacaine can be good alternative to isobaric ropivacaine.
Key Word: Spinal anaesthesia; Levobupivacaine; Ropivacaine

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INTRODUCTION

Spinal anaesthesia has a popular technique for all lower abdominal surgeries, provide a fast onset and effective sensory and motor blockade. Bupivacaine is available as a racemic mixture of its enantiomers, dextrobupivacaine and levobupivacaine. The last few years, its pure S-enantiomers, ropivacaine and levobupivacaine, have been introduced into clinical practice because of their lower toxic effects for heart and central nervous system the clinical profile of spinal ropivacaine, levobupivacaine has been evaluated in volunteers and clinical studies. The aim of the present study was to compare the isobaric levobupivacaine 15 mg, with isobaric ropivacaine 15 mg in patients undergoing infra umbilical surgeries

MATERIAL AND METHODS

With the approval of the institutional Ethical committee and written informed consent of the patient, 100 ASA I-II patients, scheduled for elective lower abdominal surgeries under spinal anaesthesia, were prospectively enrolled. Following arrival in the anesthetic room I.V access was established and an infusion of 500ml RL commenced. Patients were placed in left lateral position. After r skin infiltration with 2% lidocaine, The intra thecal injection was performed with 26G Quinkebabcok needle. Correct needle placement was identified by free flow of CSF and 15mg of drug was injected into the subarachnoid space. Patients were randomly allocated to two groups: patients in group L received 15mg of isobaric levobupivacaine and in group R received 15mg of isobaric ropivacaine. After injection of the drug the spinal needle was removed and the patient placed in supine. Standard monitoring was

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used throughout the operation. ECG, and pulse–oximetry were monitored continuosly. HR and BP were recorded preoperatively, and intraoperatively. The level of sensory block was evaluated by loss of pinprick sensation. The motor blockade was assessed by using Bromage scale. The onset of sensory or motor blockade was defined as the interval between intrathecal administration and maximum pinprick score, or a Bromage score of 3, respectively. The duration of sensory and motor blockade was defined as the interval from intrathecal injection to the point of complete resolution of sensory or to the point in which the Bromage score back to zero.

RESULTS

The characteristics of three groups were comparable in terms of HR, BP, onset and duration of sensory block, onset and duration of motor block The onset of sensory and motor block was significantly faster in the levobupivacaine group compared to the ropivacaine group, duration of sensory and motor block was prolonged in levobupivacaine group compared to the ropivacaine group, There is no significant heart rate changes between groups. There is a fall in systolic and diastolic pressures in levobupivacaine group compared to the ropivacaine group.

Table 1: Comparison of Heart Rate in two groups of patients

Heart Rate	Group L	Group R
Min-Max	71-96	74-96
Mean ± SD	82.62 ± 4.99	82.70 ± 5.20
	P = 0.906	
HR is not significant		

Table 2: Onset of Sensory Block

Onset of Sensory Block	Group L	Group R	P Value
2	38	0	
2.30	10	1	
3	2	18	P<0.001
3.30	0	8	
4	0	23	
TOTAL	50	50	

Table 3: ONSET OF Motor Block

Onset of Motor Block	Group L	Group R	P Value
3	32	1	
4	14	2	
5	4	2	
6	0	6	
7	0	3	P<0.001
8	0	18	
9	0	2	
10	0	16	
Total	5	50	

Table 4: ONSET OF Motor Block

Onset of Motor Block	Group L	Group R	P Value
Duration of Sensory block	186.40±26.86	159.00±25.25	0.001
Duration of Motor block	154.60±36.04	90.90±14.70	0.001

DISCUSSION

This study shows that the intrathecal Administration of 15 mg levobupivacaine or 15 mg ropivacaine was well tolerated and an adequate block for infra umbilical surgeries. Levobupivacaine presented a faster onset and a prolonged duration of sensory and motor block compared to the ropivacaine group the present study is the first, to our knowledge, to compare the isobaric levobupivacaine with isobaric ropivacaine in patients undergoing infra umbilical surgeries under spinal anaesthesia. In our study we have used a ratio of 1:1 by volume in order to know the minimum possible dosage of both the drugs to obtain adequate Anaesthesia. Isobaric levobupivacaine 15mg and Isobaric ropivacaine 15mg was used. The onset of sensory block at surgical site was between 2 and 3 minutes in Levobupivacaine group and it was between 3 and 4 minutes in ropivacaine group. All the patients had a mean sensory block by 3 minutes in the Levobupivacaine group. Whereas the mean onset of sensory block has started only after 4 minutes in the majority (23/50) of the patients of the ropivacaine group. According to this Levobupivacaine group has a quicker onset of sensory block as compared to ropivacaine group. In our study the mean duration of sensory block in levobupivacaine group is 186.40±26.86 and the mean duration of sensory block in ropivacaine group is 159.00±25.25. According to the this the duration of sensory block was prolonged in group L compared to the group R and this is both clinically and statistically significant. The onset of motor block at surgical site was between 3 and 4 minutes in Levobupivacaine group and it was between 8 and 10 minutes in ropivacaine group. All the patients had a mean motor block by 3 minutes in the Levobupivacaine group whereas the mean onset of motor block has started only after 4 minutes in the majority (32/50) of the ropivacaine group. According to this the Levobupivacaine group has a quicker onset of motor block as compared to ropivacaine group. The mean duration of motor block in levobupivacaine group is 154.60±36.04 min and the duration of motor block in ropivacaine group is 90.90±14.70 min. According to the this data the duration of motor block was prolonged in group L compared to the group R and this is both clinically and statistically significant. The mean SBP in levobupivacaine group & Ropivacaine group is 82.62±4.9 and 82.70±5.20, and the mean DBP in levobupivacaine group & Ropivacaine

group is 63.36±6.93 and 62.16±5.25. According to this there is no significant variation in BP in both the groups

CONCLUSION

Our study reveals that 15 mg of isobaric levobupivacaine when administered intrathecally provides adequate anesthesia for infra umbilical surgeries Onset of sensory block is fast compared to that of ropivacaine with same level of maximum sensory block. The duration of anagles is was significantly same with Ropivacaine. But there is faster onset of motor block and prolonged duration of motor block with levobupivacaine compared to ropivacaine cardiovascular stability is better in levobupivacaine. Hence levobupivacaine can be used successfully for infraumbilical surgeries

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