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ORIGINAL 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 ASA I and ASAII coming for elective infra umbilical surgeries under spinal anaesthesia were randomly allocated to two groups with 50 patients in each group. GroupL 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 and 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 GroupR.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.

Keywords: Spinal anaesthesia ; Levobupivacaine; Ropivacaine

1.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 fo r heart and central nervous system The clinical profile of spinal ropivacaine ,levobupivacaine has been evaluated in volunteers and clinical studies. The aim of the presentstudy was to compare the isobaric levobupivacaine 15mg, with isobaric ropivacaine 15mg in patients undergoing infra umbilical surgeries

2.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.

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Following arrival in the anesthetic room I.V access was established and an infusion of 500 ml RL commenced. Patients were placed in left lateral position. Afte r skin infiltration with 2% lidocaine, The intra thecal injection was performed with 26 G Quinke babcok needle. Correct needle placement was identified by free flow of CSF and 15 mg 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 15 mg of isobaric ropivacaine. After injection of the drug the spinal needle was removed and the patient placed in supine.

Standard monitoring was 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.

3.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

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
Inference	P=0.906 HR is not significant	

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	

ONSETOF 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	50	50	

ONSETOF 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

4.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 groupThe 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

Chattopadhyay et al., (2013) Compared the anesthetic efficacy and safety of three local anesthetic agents : racemic bupivacaine and its two isomers : ropivacaine and levobupivacaine, in patients undergoing lower abdominal surgeries Ropivacaine presented a shorter duration of both motor and sensory block than bupivacaine and levobupivacaine ($P < 0.05$) bupivacaine required more often the use of a vasoactive drug (ephedrine) compared to both ropivacaine and levobupivacaine and of a sympathomimetic drug (atropine) compared to the ropivacaine group.

A. Sell, K. T. et. al. in the year 2004 Conducted a study to determine the minimum effective local anaesthetic dose for spinal anaesthesia, of isobaric Levobupivacaine and ropivacaine via spinal catheter for hip replacement surgeries Thus they concluded that minimum local anaesthetic dose (MLAD) for Levobupivacaine was 11.7 mg and that of Ropivacaine was 12.8 mg for spinal anaesthesia.

P.Gautier (2003). et. al Conducted a study aimed at determining intrathecal (i.t.) ropivacaine and levobupivacaine provided anaesthesia (satisfactory analgesia and muscular relaxation) and postoperative analgesia of similar quality to bupivacaine in patients undergoing Caesarean section .They showed that the racemic mixture of bupivacaine 8 mg associated with sufentanil 2.5 mcg remains an adequate choice for Caesarean section under spinal anaesthesia. The success rate is significantly superior to levobupivacaine 8 mg but not to ropivacaine 12 mg.

Ying Y. Lee 2009 Compared the potencies of levobupivacaine, ropivacaine, and bupivacaine when given intrathecally using a combined spinal-epidural technique in patients having lower limb surgery). The relative potency ratios among the different drugs were levobupivacaine/bupivacaine 0.97 (95% CI: 0.81–1.17), ropivacaine/bupivacaine 0.65 (95% CI: 0.54–0.80), andropivacaine/levobupivacaine 0.68 (95% CI: 0.55–0.84). The potency of the local anesthetics was bupivacaine = levobupivacaine >ropivacaine.

Suman chatopadhyay, Bibhas halder, G 2015 Randomized double blind study conducted to compare the anesthetic efficacy and safety of two concentration of local anaesthetic agent levobupivacaine in patient undergoing vaginal hysterectomy. levobupivacaine was well tolerated and provide similar effective anaesthesia for vaginal hysterectomy the lower concentration of levobupivacaine had a short duration of both sensory and motor block with more stable hemodynamicprofile.

IndumathiT, et all 2014 To compare the block characteristics and hemodynamic stability of intrathecal ropivacaine and levobupivacaine with fentanyl and magnesium as adjuvant for lower abdominal surgeries.

Ashton Dionel, 2014. They conducted a study to compare the intrathecal hyperbaric 0.5% bupivacaine, isobaric 0.5% levobupivacaine and isobaric 0.75% ropivacaine for

lower abdominal surgeries. The onset of Bromage 1 motor block was similar in bupivacaine and levobupivacaine group with a median onset of 3 and 2.5 min respectively their onset was earlier than ropivacaine . the difference in onset of Bromage 3 motor block was significant between all three groups the duration of sensory and motor block was significantly shorter in bupivacaine group as compared to the ropivacaine and levobupivacaine groups. Hyerbaic bupivacaine produce earlier onset of sensory and motor as compared to the isobaric levobupivacaine and isobaric ropivacaine . hyperbaric bupivacaine thus seems to de ideal for shorter duration surgeries at the expense of hemodynamic stability.

The slower onset of motor block in ropivacaine group compared with the bupivacaine and levobupivacaine was also noticed by COPPEJANSet .al (4) in a low dose combined spinal- epidural anaesthesia for caesarean delivery. That study confirmed that these three local anaesthetics can be used successfully, induce less motor block but that ropivacaine requires at least 50% larger dose than bupivacaine or levobupivacaine

5.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 analgesia 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

6.REFERENCES

1. G.A.McLeoad. (2004). Density of spinal anaesthetic solutions of bupivacaine, levobupivacaine, and ropiacaine with and without dextrose. British Journal of Anaesthesia, 92(4), 547-551. doi:10.1093/bja/aeh094

2. A. Sell, K. T. Olkkola, J. Jalonen and R. Aantaa,. (2005). Minimum effective local anaesthetic dose of isobaric Levobupivacaine and Ropivacaine administered via a spinal catheter for hip replacement surgery. Br J Anaesth, 94(2), 239-242.

3. P. Gautier, M. De Kock, L. Huberty, T. Demir, M. Izydorczic,and B. Vanderick. (2003). Comparison of the effects of intrathecal ropivacaine,levobupivacaine, and bupivacaine for Caesarean section. Br J Anaesth, 91(5), 684-689.

4. Ying Y. Lee, Warwick D. Ngan Kee, Siu Y. Fong, John T. C. Liu, Tony Gin. (2009). The Median Effective Dose of Bupivacaine,Levobupivacaine, and Ropivacaine After Intrathecal. Anesth Analg, 109, 1331-4.

5. Chattopadhyay S, Halder B, Saha GC, Karmakar S, Pahari S. (2013, Sept-dec). Comparison of two concentrations of isobaric intrathecal levobupivacaine for vaginal hysterectomy. Indian J Pain, 27(3), 154-58.

6. Indumathi T, Manjula.R , Sangeetha.c ,Vasundhara.M. (2014, May). Comparative Study of Intrathecal Ropivacaine and Levobupivacaine with Fentanyl and Magnesiumas Adjuvants for Lower Abdominal Surgeries. IOSR-JDMS, 13(5), 39-43.

7.Dr . Ashok das, Dr.Rajdip Hazara, Dr. Bivash Halder,Dr. Susmita Ghosh , Dr. Sisir chakraborty. (2015, April). Comparison of effects of intrathecal Bupivacaine , Levobupivacaine ,and Ropivacaine in lower abdominal surgery. International journal of information research and review, 2(04), 636-6417.

8 .Coppejans H. C, Vercauteren M. P, Low dose combined spinal – epidural anesthesia for caesarean delivery. A comparison of three plain anesthetics, ACTA ANESHESIOL. BELG, 57 (1),39-43,2006.

9.Gianluca Cappelleri ,Giorgio Aldegheri , Giorgio Danelli, Chiara Marchetti, Massimilano Nuzzi, Gabriella Iannandrea, Andrea Casati. (2005). Spinal Anesthesia with Hyperbaric Levobuopivacaine and Ropivacaine for Output Knee Arthroscopy: A Prospective, Randomized, Double-Blind Study. Anesth Analg, 101, 77-82.

10.M.B.Breebaart, M. P. Vercauteren ,V . L .Hoffmann and H . A. Adriaensen. (2003). Urinary Bladder scanning after day-case arthroscopy under spinal anaesthesia: comparison betwwen lidocaine, ropivacaine, and levobupivacaine. British Journal of Anaesthesia, 90(3), 309-13. doi:10.1093/bja/aeg078

11.A Mehta, V Gupta, R Wakhloo, A Gupta, R Bakshi, B Kapoor, S Gupta 2007. (2007). Comparison of efficacy of intrathecal ropivacaine and levobupivacaine for lower limb surgeries. Internet journal of anaesthesiology, 17.

12.R . Parpaglioni, M.G. Frigo, A. Lemma, M. Sebastiani, G. Barbati and D. Celleno. (2006). Minimum local anaesthetic dose (MLAD) of intrathecal levobupivacaine and ropivacaine for Caesarian section. Anaesthesia, 61, 110-115.

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