European Journal of Molecular & Clinical Medicine

ISSN 2515-8260 Volume 09, Issue 03, 2022

EVALUATION OF EPIDURAL ROPIVACAINE FOR LOWER ABDOMINAL SURGERIES-A CLINICAL STUDY

[1]Dr P. Nikhitha, [2]Dr D. Jyothirmayee, [3*]Dr S. Manasa ,

[1]Senior resident, [2,3]Assistant Professor,: Department of Anesthesia: Osmania medical College and Hospital, Koti, Hyderabad.

ABSTRACT

Background: Different adjuvants are coadministered with local anesthetics to improve the speed of onset and duration of analgesia, and to reduce the dose, the selection of which is often left to the choice of an anesthesiologist.

Aims: Aim of the study is to evaluate the efficacy &safety of 0.75% Ropivacaine in epidural anaesthesia for lower abdominal surgeries.

Materials and methods: In the present clinical study, 0.75% preservative free ropivacaine is used through epidural route for patients undergoing elective lower abdominal surgeries belonging to ASA grade I and II with in the age group of 20 to 60 years. We observed the time of onset , highest cephalad spread, two segment regression from highest cephalad spread and total duration of sensory block as well as degree of motor blockade and it's duration, haemodynamic changes, duration of post operative analgesia and side effects , if any.

Results: With 0.75% preservative free ropivacaine, the mean onset time of sensory block for S1, L1, T10, andT6 dermatomal levels are 22.9+/-5.01 mins, 8.48+/- 3.18 mins, 13.4+/-3.88 mins and 29.5+/-3.33 mins respectively. The maximum cephalad spread is T5 dermatomal level and mean time to reach maximum cephalad spread is 29.77+/-4.94 minutes. The mean duration of sensory blockade and motor blockade are 406.25 +/- 23.22 minutes and 263.58 +/- 21.19 minutes respectively. The motor blockade time is far less than the sensory blockade. Only 6.66% of the total patients achieved the Modified Bromage scale3. In our present study, the mean total duration of postoperative analgesia is 246.67+/- 42.86 minutes. There are not many changes in the haemodynamics and incidence of side effects and requirement of vasoactive drugs were minimal.

Conclusions: 0.75% ropivacaine has a longer duration of sensory blockade and the duration of motor blockade is for less than the sensory blockade, their by providing post operative analgesia for nearly more than four hours. It appears to be an ideal and safe local anaesthetic for these surgeries.

Keywords: Ropivacaine, post operative analgesia, haemodynamics

INTRODUCTION

The principal function of anaesthesiologist in patient care is not only to save lives, but also to relieve pain and suffering. Pain was often considered to be a punishment for committed sins or a form of religious suffering. Neuraxial anaesthesia is safer than general anaesthesia if managed well and can provide pain relief even in the post-operative period. [1]

Historically Bupivacaine was used clinically as it had a long duration of action. Subsequently it was found that propyl derivatives of pipecoloxylidide were less toxic than butyl derivatives (Bupivacaine).Thus Ropivacaine was developed later. Epidural techniques are widely used for operative anaesthesia, obstetric analgesia, post-operative pain control and chronic pain management.Epidural anaesthesia and analgesia are most often performed in thelumbar region. The newer amide local anaesthetic ropivacaine, shares many physiochemical

properties with bupivacaine but with less systemic toxicity and greater margin of safety than other local anaesthetic agents of similar duration of action.[2,3]

Use of neuraxial blocks for surgeries has increased rapidly during the last decades for providing pain relief surgeries and hemodynamic stability during intraoperative and postoperative periods.The rate of recovery from a use dependent block is slower in bupivacaine treated papillary muscles.This slow rate of recovery results in an incomplete restoration of Na+ channel availability between action potentials.these effects explain the arrythmogenic potential of bupivacaine.

It is possible to perform all surgical procedures under general anaesthesia. But, general anaesthesia has its own disadvantages and limitations in terms of its use in patients with cardiopulmonary diseases coming for abdominal surgeries. Therefore, in such patients, regional anaesthesia is preferred. The need for specialized post operative monitoring and care is minimal with regional than general anaesthesia. Regional techniques may also decrease the length of hospital stay. Epidural anaesthesia is superior to spinal anaesthesia as the desired segmental level of block can be achieved with less significant haemodynamic disturbances and increases duration of block and postoperative analgesia.

Research for a local anaesthetic with less potential for cardiotoxicity was needed and found ropivacaine.These findings generated laboratory research program, which was aimed at identifying a local anaesthetic with a similar clinical profile but with less cardiotoxicity than bupivacaine. The physico–chemical properties of ropivacaine suggest that its rate of onset (related to pKa) is similar to that of bupivacaine, & that its absolute potency (Lipid solubility)& duration of effect (protein binding) is slightly less compared to bupivacaine. Ropivacaine has slightly rapid plasma clearance & shorter elimination half life than that of racemic bupivacaine.[4,5] This present prospective clinical study is intended to evaluate the onset, regression & duration of sensory block and intensity & duration of motor block and haemodynamic effects and also duration of post operative analgesia of 0.75% preservative free epidural Ropivacaine for lower abdominal surgeries.

MATERIAL & METHODS

This study is a prospective study conducted in Department of Anethesia . A written and informed consent was taken from all the patients included in the study. Ethical clearance is taken from the hospital ethical committee as per protocol. After institutional ethical committee approval and after informed consent of the patients, this study was undertaken on 60 patients of either sex, aged between 20 to 60 years belonging to ASA physical status grade I & II , scheduled for elective lower abdominal surgery.

Inclusion Criteria:- Patients aged between 20-60yearsof either sexwith ASA Grade I &II.

Exclusion Criteria:-Pregnant women, Patients with H/o Cardio-Respiratory disorders, Hepatic and Renal disesase, h/o convulsions & neurological deficits, Spinal deformities & Psychiatric diseases, Aspirin ingestion / anticoagulants in the preceeding week.

A thorough pre-anaesthetic check-up is done for all patients, a day beforesurgery. Patients were evaluated for any systemic diseases. No specialinvestigations were required pertaining to the study. Basic investigations like haemoglobin, total & differential WBC count, bleeding & clotting time, HIV & HBsAg, ECG and urine routine investigations were carried out for all the patients. Written informed consent was obtained before the surgery after explaining the patients about the drug and epidural anaesthetic procedure. All the patients were educated about the verbal numerical scale to grade the pain in the post operative period.All patients were given Tab. Alprazolam 0.5 mg orally on the previous night of surgery at bed time as pre-medication.

Preparation in operation theatre:-

Anaesthesia machine is checked. Appropriate size endotracheal tubes, laryngeal mask airways as appropriate for weight, working laryngoscope with medium and large sized blades, stylet and working suction apparatus were kept ready before the procedure. Emergency drug tray consisting of atropine, adrenaline, mephenteramine and dopamine were also kept ready.

Anaesthetic technique and monitoring:-

Once the patient's nil oral status was confirmed, patient was shifted to operating room and was preloaded with Ringer's Lactate fluid @ 10 ml/kg over 30 to 60 minutes after securing an intravenous access with 18 gauge IV Cannula. All the patients are connected to monitorsandbase line heart rate,blood Pressure(systolic & diastolic, mean arterial blood pressure), respiratory rate and SpO2 were recorded. Patient was positioned in the supine position and 15 ml of study drug (preservative free Ropivacaine 0.75%) was injected through epidural catheter intermittently over 3 minutes after negative aspiration for blood and CSF. The time at which epidural injection of the study drug was completed was considered as zero (t=0).Surgery was allowed to commence when adequate sensory blockade was achieved for that particular surgery. All the patients were given Oxygen @ 4L/min through plain face mask. No intravenous analgesics or opioids were given during the procedure. After injecting the study drug in to the epidural spaces, following clinical assessments were made from time zero,

Onset of sensory blockade was assessed by pin prick method at S1, L1, T10 and T6 dermatomal levels from time zero. The sensory block was assessed bilaterally by pain to pinprick every minute till 10 minutes and later every 2 minutes till sensory blockade level was established at all 4 dermatomal levels and then every 15 minutes until the first hour had elapsed, then every 30 minutes interval until the complete recovery from sensory blockade. Time to achieve highest level of sensory block, time required for 2-segment regression from highest cephalad spread, time required for regression to T10 dermatome & total absence of the sensory block at any dermatomal level were assessed and recorded.

Motor block was assessed by modified Bromage scale. Onset time, intensity of motor blockade and duration of motor blockade was tested bilaterally using modified Bromage scale (Proposed by Bromage and modified by Logan- Smith). [6]

Haemodynamic and vital parameters like ECG, blood pressure (Systolic, Diastolic & mean arterial blood pressure), respiratory rate and SpO_2 monitoring and recording was done continuously every 5 minutes for 1^{st}hour , every 15 mins for next 2 hours and every 30 minutes later on until complete recovery from sensory block. In the event of fall of heart rate less than 60 beats/minute, it was treated with Inj: Atropine IV and Mean arterial blood pressure fall less than 60 mm of Hg, it was treated with vasopressors and intravenous fluids. Crystalloid IV fluids given intra operatively & quantity given were recorded. Side effects like Hypotension, Bradycardia, Nausea, and Vomiting & Shivering in Intra-operative period were noted.

All patients were observed in the post anaesthesia recovery room and in the ward until complete recovery from sensory blockade and duration of post operative analgesia & any side effects if present were recorded. Rescue analgesia was given when patient complained of mild pain (VAS score between 2.5 to 5) and time noted. Patients were also observed for next 24 hours after the procedure.

Data analysis:-

In our study, all the data needed is extracted case information proforma sheet and then converted into an electronic data base in excel software. The variables were checked for accuracy and completeness before entry. The Side effects: - Any unfavourable events like nausea, vomiting, following were analysed: Patient demographic variables: onset, duration and regression of sensory block and onset & duration of motor block, haemodynamic variables, duration of post operative analgesia and side effects. All variable data were summarised as mean and standard deviation and presented through tables and charts. For categorical variables, chi-square (p value < 0.05 is considered significant) and for continuous variables ANOVA tests were applied to test the significance. The level of significance is set at 5%.

RESULTS

A total of 60 patients of either sex belonging to ASA I & II are included in the present study. Written informed consent was obtained from all the patients and they are informed about the epidural procedure. Patients are also educated about the verbal numerical scale.

Table-1: Age and sex distribution

Age	**Male**		**Female**		**TOTAL**	
	No	%	No	%	No	%
20-30	8	26.7	0	0.0	8	13.3
31-40	9	30.0	20	66.7	29	48.3
41-50	10	33.3	10	33.3	20	33.3
51-60	3	10.0	0	0.0	3	5.0
TOTAL	30	100.0	30	100.0	60	100.0

The mean age of the patients was 39.18+/-8.49 years. The gender distribution is equal .i.e. there are 30 Male and 30 Female patients in the study. 63.3% of Male patients are in the age group of 31-50 years while 100% ofFemale patients are in the same age group.

Table-2: Demographic distribution

Height in cms	**No of patients**	**Percent**
145-155	20	33.3%
156-165	10	16.7%
166-175	30	50.0%
Weight (Kgs)		
45-55	21	35.0%
56-65	33	55.0%
66-75	6	10.0%
ASA		
ASA Grade-1	53	88.4
ASA Grade-11	7	11.6
Type of surgery		
Abdominal hysterectomy	20	33.3%
Inguinal mesh hernioplasty	22	36.6%

Appendicectomy	9	15.0%
Incisional hernia repair	4	6.6%
Ovarian cystectomy	3	5.0%
Open cystolithotomy	2	3.3%
TOTAL	60	100%
Time (Min) of surgery		
85-110	24	40.0%
111-135	7	11.7%
136-160	8	13.3%
161-185	21	35.0%
Onset (in Min)		
10- 15	2	3.3%
16-20	26	43.3%
21-25	12	20.0%
26-30	16	26.7%
31-35	4	6.7%
Total	60	100.0%

50% of the patients of are in the height range of 166-175 cms with a mean of 161.5+/- 9.09 cms.
The mean weight of the patients is 57.33+/- 5.76 Kgs and 90% of the patients are in the weight group of 45 to 65 Kgs.
In ASA physical status distribution, 53 patients belonged to ASA grade I and only 7 patients to ASA grade II. 81.6% patients are in the age group of 31 to 50 years.
The site of placement of epidural catheter was in $L_2 – L_3$ interspace for 53 patients and L3-L4 space due to technical reasons, for 7 patients.
From the injection of drugs into the epidural space the mean time interval to the beginning of surgery is 23.41 +/- 7.0minutes. The mean duration of surgery is 134.3 =/_ 33.71minutes. In the present study the time of onset of sensory block was assessed for 4 dermatomal levels. i.e. S_1, L_1, T_{10} and T 6 using pin prick method.
The mean onset time for sensory block at S_1 dermatomal level is 22.9 +/- 5.01 minutes in the present study. it is seen that 93.3% of the patients achieved level S1 block within 30 minutes.

Table-3: Onset of sensory Block at various levels

Onset of sensory Block - L1	No of patients	Percent
1-5	14	23.3%
6-10	34	56.7%
11-15	12	20.0%
Total	60	100.0%
Onset of sensory Block - T10		
5-10	17	28.3%
11-15	26	43.3%
16-20	14	23.3%
21-25	3	5.0%

Onset of sensory Block – T6		
16-20	1	1.96%
21-25	12	23.52%
26-30	21	41.17%
31-35	9	17.67%
36-40	7	13.72%
41-45	1	1.96%

For L1 dermatomal level, the mean time required for the onset of sensory block is 8.48 +/- 3.18 minutes. 80% of the patients achieved in less than 10 minutes The mean onset time for sensory block at T 10 dermatomal level is 13.4 +/- 3.88 minutes in the present study.
51 patients out of 60 achieved T6 dermatomal level sensory block and the mean onset time for sensory block at T6 dermatomal level is 29.25 +/- 5.28 minutes in the presentstudy.

Table-4: Highest level and time of sensory block achieved

Highest level of sensory block achieved	**No of patients**	**Percent**
T5	6	10.0%
T6	45	75.0%
T7	4	6.6%
T8	5	8.4%
Time (in Min)		
20-25	11	18.3%
26-30	29	48.3%
31-35	10	16.7%
36-40	9	15.0%
41-45	1	1.7%

In the present study, the highest level of sensory block achieved is T_5 in 10% of patients (6 patients out of 60) with a range between T_5 – T_8. Majority (75%) of patients achieved T6 dermatomal level. The highest level of sensory block achieved is T5 with a range of T 5 - T 8.
The mean time taken to reach highest level of sensory block is 29.77 +/- 4.94 minutes.83.3% of the patients achieved the highest level between 20 to 35 minutes.

Table-5: Sensory block regression and Duration of sensory block

Block Regression	Time Range (mins)	Mean	SD
2-Segment from Maximal cephalad spread	175-225	209.03	22.75
Regression to T 10	200-325	273.4	23.57
Complete regression (Total Duration)	350-475	406.25	23.22

The mean time required for two segment regression of sensory block from maximal cephalad spread is 209.03 +/- 22.75 minutes. 76.7% of the patients had two segment block regression between the time ranges of 175 to 225 minutes.
For sensory block to regress to T10 dermatomal level, the mean time taken is 273.4 +/- 23.57 minutes. Most of the patients i.e. 90% of them had sensory block regression between the ranges of 226 to 300 minutes.
The mean total duration of sensory block is found to be 406.05 +/- 23.22 minutes.

Table-6: Sensory Block regression by 2 dermatomal level from highest level of sensory block achieved.

Sensory Block regression by 2 dermatomal level	No of patients	Percent
175-200	27	45.0
201-225	19	31.7
226-250	11	18.3
251-275	3	5.0
Total	60	100.0
Sensory Block regression to T10 dermatomal level		
200-225	1	1.7%
226-250	14	23.3%
251-275	21	35.0%
276-300	19	31.7%
301-325	5	8.3%
Complete absence of sensory block at any Dermatomal level		
350-375	6	10.0%
376-400	25	41.7%
401-425	17	28.3%
426-450	10	16.7%
451-475	2	3.3%

In 95% of patients the block regression by two dermatomal levels is in the range of 175-250 minutes.
In 91.7% of patients the block regression to T10 dermatomal level is in the range of 200-300 minutes.
In 96.7% of patients the complete block regression (total duration of sensory blockade is in the range of 350-450 minutes.

Table-7: Onset time for Bromage scale-grades

Onset time for Bromage scale-grade 1	No of patients	Percent
10-13	16	26.7%
14-17	20	33.3%
18-21	21	35.0%
22-24	3	5.0%
Total	60	100.0
Onset time for Bromage scale-grade 2		
22-24	6	10.0%
25-29	25	41.7%
30-34	23	38.3%
35-39	6	10.0%
Total duration of Motor block		
200-225	2	3.3

226-250	16	26.7
251-275	26	43.3
276-300	15	25.0
301-325	1	1.7

The degree of motor blockade is assessed using Modified Bromage scale. All the patients achieved Bromage scale 1 and 2 and only 4 patients achieved Bromage scale 3.
Bromage scale 1 is achieved in all patients with a mean time of 15.98 +/- 3.38 minutes. Majority of patients (95%) developed this in the time range of 10 to 21 minutes
The mean onset time for Bromage scale 2 is found to be 29.31 +/- 3.78 minutes. 90% of the patients achieved Bromage 2 scale between 22 to 34 minutes.
The total duration of motor block is assessed when the pt could raise the extended leg on both sides and in the present study, the mean total duration of motor block is found to be 263.58 +/- 21.19 minutes.
In the present study, patient variables like age & height are tested for statistical significance with highest sensory block level, total duration of sensory & motor block by applying Chi – square test & found to be statistically not significant.
All the patients were connected to monitors and all the haemodynamic parameters like Heart rate, Systolic blood pressure, Diastolic blood pressure and mean arterial blood pressure are recorded and monitored every 5 minutes for first hour, then every fifteen minutes for next 2 hours and later every 30 minutes till complete recovery of the sensory block level.
There is 10% decrease in Heart rate from the base line value and the maximum drop in Heart rate occurred at mean time of 26.08 +/- 4.22 minutes from the time of injecting study drug in to the epidural space. No patients had bradycardia throughout the procedure.
In our study, it is observed a fall of 10% in the mean systolic pressure from the base line value and the maximum decrease occurred at a mean time period of 30.41 +/- 4.04 minutes.
Even the mean diastolic blood pressure showed a fall of 12% from the base line value and the maximum fall occurred at a mean time of 26.08 +/- 4.22minutes.
The mean arterial blood pressure showed a similar trend like diastolic blood pressure and maximum decrease occurred at a mean time of 26.08 +/- 4.22minutes.
ECG was monitored continuously for all patients and no significant changes were observed.
All the patients are given 100% Oxygen through plain face mask @4L/min. The mean SpO2 is 99%-100% in all the patients. All the patients are spontaneously breathing and no significant change noted.

Table-8: Duration of Post operative analgesia

Duration (in Min)	**No of patients**	**Percent**
175-225	26	43.34%
226-275	22	36.66%
276-325	12	20.00%
Total	60	100.0

The mean duration of post operative analgesia is 246.67+/-42.86 minutes in our study. In the present study, all the patients are pre-loaded with Ringer‘s Lactate fluid @ 10 ml/Kg over 30-60 minutes before the epidural procedure is started.
The mean intra operative crystalloid requirement is 1000 +/- 225 ml.

The mean arterial pressure fell less than 60 mmHg in 3 patients and are treated with Inj. Mephenteramine 6 mg- one dose. All of them responded and no further dose of vasopressors agent is required. No patients developed bradycardia and none of the patient received Inj Atropine.
Side effects are very minimal in the present study. None of the patients had any incidence of bradycardia.Only 3 patients had MAP fall of less than 60 mm of Hg and are treated accordingly with Inj: Mephenteramine 6 mg. 6 patients had shivering which is reduced after applying warm blankets. 2 patients had vomiting and treated with Inj: Ondansetron 4mg IV. No other complications are noted until complete recovery from sensory block.

DISCUSSION

Pain relief is necessary for both humanitarian and therapeutic reasons. Surgery produces tissue injury with consequent release of histamine and inflammatory mediators which activates peripheral nociceptors, which initiate transmission of nociceptive information to the central nervous system (CNS). Transmission of nociceptive stimuli from the periphery to the CNS results in the neuroendocrine stress response which may potentiate detrimental physiologic effects in other areas of the body. Therefore it is utmost important to block this transmission by adopting good anaesthesia procedures of highest quality and safety. The primary aim of our present clinical study is to evaluate the anaesthetic effect of 0.75% preservative free ropivacaine given through epidural route for lower abdominal surgeries and to find out whether the haemodynamic changes caused by the study drug in different lower abdominal surgeries are within safe limits when used epidurally.
In the present study, we observed the time of onset , highest cephalad spread, two segment regression from highest cephalad spread and total duration of sensory block as well as degree of motor blockade and it‘s duration, haemodynamic changes and side effects , if any.
In the present study, the onset of sensory block for different dermatomal levels are tested. We found that the mean time of onset of sensory block at S1, L1, T10 and T6 are 22.9+/-5.01 mins, 8.48+/-3.18 mins, 13.4+/-3.88 mins and 29.5+/-3.33 mins respectively. The highest level of sensory block achieved is T5 dermatomal level and mean time to reach highest cephalad level is 29.77+/-4.94minutes. When time required for regression of sensory block is measured, we observed that mean time for two segment regression from highest cephalad spread is 209.03+/- 22.75 minutes and the mean time for sensory block regression to T 10 segment is 273.4 +/- 23.57 minutes.
The mean time for complete regression of sensory block .i.e. Total duration of sensory block is 406.25+/- 23.22 minutes.In the double blind study conducted by Bendan.T, Finucane and et al45 , where comparison of ropivacaine 0.5%, 0.75%, 1% and bupivacaine in patients undergoing abdominal hysterectomy, they found similar results for sensory onset and total duration of sensory block and results are comparable with our present study. The objective of their study is to test the dose/ response relationship of increasing doses of ropivacaine on the duration and quality of epidural anaesthesia on to compare these effects with on established control (bupivacaine). But, in their study, they have used 25ml where as in your study we have used 15ml of 0.75% ropivacaine.
In another study conducted by C.P.J. Morton and et al[8] , where they have used 20ml of 0.75% ropivacaine for extradural anaesthesia in elective Caesarean section and have observed that onset of sensory block at S1 , T10 and T6 were 20 mins (range of 5-13) , 10 mins (range of 5-18) , 15 mins (range of 5-38) respectively which are similar and comparable with ourstudy. In their study, the mean onset time for sensory block at T10 level is 10 minutes which is 3.4 minutes earlier than our present study result which is 13.4 minutes. This could be probably because of using 20ml of 0.75% ropivacaine in their study.

In the study conducted by DusankaZaric, KjellAxelsson et al[9] where in epidural neuroaxial block is given with 20ml of 0.75% ropivacaine and have observed that for 0.75% ropivacaine group, the onset of sensory block is 9 +/- 0.9 minutes and time for regression to two dermatomes from highest cephalad level is 203 +/- 20.3 minutes which were similar and comparable with our study.
In the study conducted by Tuttle. AA, Katz and et al[10] , where they had used 20ml of 0.75% ropivacaine for gynaecological abdominal surgery they have observed that the total duration of sensory block was 404+/-62 minutes which was similar to our results.
Study done by J.A. Katz, Phillip. O., Bridengaugh and et al [10] also showed that mean time for two segment regression from highest cephalad spread was 180 +/- 30 minutes for 0.75% ropivacaine group which is comparable with our study.
In our present study, only 4 patient‘s .i.e. 6.66% of total patients achieved Modified Bromage scale grade 3 in motor blockade assessment. The mean time of onset of Modified Bromage scale degree 1 and 2 are 15.98 +/- 3.38 minutes and 29.31 +/- 3.78 minutes respectively. The total duration of motor blockade is 263.58 +/- 21.9 minutes.The motor block onset and duration are similar and comparable with the study conducted by Brendan.T, Filnucane and et al[11].In the study conducted by Tuttle AA, Katz and et al[10], the time for motor block onset was 12 +/- 3 minutes and duration of motor block was 310 +/_ 65 minutes which are comparable with our study results.
In another study conducted by C.P.J.Morton and et al[8], the onset of Bromage scale I motor block and Bromage scale 2 motor block is 18 mins (range of 6-45) and 26 mins(range of 11-45) respectively which are comparable with our study.
In our present study, the mean total duration of postoperative analgesia is 246.67+/- 42.86 minutes. In the present study, it is notable that we found marked separation between the effect of sensory and motor block (total motor block is 263.58 +/- 21.19minutes and total sensory block is 406.25+/-23.22 minutes). This shows that 0.75% ropivacaine provides analgesia in the post-operative period even after motor function returns.
All the haemodynamic parameters are monitored and recorded and there are no significant changes with 0.75% Ropivacaine from base line values. Maximal decrease in Heart rate, Systolic blood pressure, Diastolic blood pressure and Mean arterial bloodpressue occurred at 26.08+/-4.22, 30.41+/- 4.04, 26.08+/-4.22 and 26.08 +/- 4.22 respectively.Only 3 patients required InjMephenteramine due to fall in MAP of less than 60 mm of Hg,., Otherwise, all the 60 patients are haemodynamically stable throughout the procedure.There are little changes in oxygen saturation as measured by pulse oximeter and respiratory rate in the present study which are similar to many studies conducted by other investigators. In our study , incidence of side effects are minimal. Only 2 patients had vomiting , 6 patients had shivering and 3 patients had hypotension (MAP <60 mm of Hg). Hypotension is treated with InjMephenteramine 6 mg,The mean requirement of Crystalloids during intra operative period is 1000 +/- 220 ml.

CONCLUSION

From our present study, we conclude that 0.75% ropivacaine has a longer duration of sensory blockade and the duration of motor blockade is for less than the sensory blockade, their by providing post operative analgesia for nearly more than four hours with no significant changes in haemodynamics and a few side effects in patients undergoing lower abdominal surgeries. It appears to be an ideal and safe localanaesthetic for these surgeries. However, this study needs to be conducted on a larger population for further evaluation.

REFERENCES

1. Kumar A, Kumar R, Kumar R, Koshire A. The Comparative Study of Epidural Anesthesia between Isobaric Ropivacaine 0.5% and Isobaric Bupivacaine 0.5% for Lower Abdominal Surgery. *Anesth Essays Res*. 2019;13(4):688-691.
2. Geetha,L.Umapradeepa,K.Chandraprakash,R.PanduNaik.A comparative study of 0.75% ropivacaine and 0.5% bupivacaine for epidural anaesthesia in patients undergoing lower abdominal and lower extremity surgeries.IAIM,2017;4(11);250-258.
3. Kumar KS, Rao K. The efficacy of epidural ropivacaine 0.75% and levobupivacaine 0.5% in abdominal and lower limb surgeries- a comparative study. Int J Res Med Sci 2016;4:4101-7.
4. J. B Whiteside, J. A. Wildsmith: developments in local anaesthetic drugs British journal of anaesthesia.2001:87(1); 27 –35.
5. Charles B. Berde.CaryR.Strichartz:localanaesthestics.Miller's Anaesthesia 2001;1:492.
6. Logan MR, Drummond GB. Spinal anesthesia and lumbar lordosis. *AnesthAnalg* 1988; 67: 338–41
7. Moller. R, Cavino. B. G: effects of progesterone on the cardiac electro - physiologic alterations produced by ropivacaine and bupivacaine. Anaesthesiology. 1992; 77; 73: 741.
8. C. P. J. Morton, S. Bloomfield et al : Ropivacaine 0.75% for extradural anaesthesia in elective Caesarean section: an open clinical and pharmacokinetic study in mother and neonate‖. -British Journal of Anaesthesia-1997-79-3-8.
9. Zaric D, Axelsson K, Nydahl PA, Philipsson L, Larsson P, Jansson JR. Sensory and motor blockade during epidural analgesia with 1%, 0.75%, and 0.5% ropivacaine--a double-blind study. AnesthAnalg. 1991 Apr;72(4):509-15.
10. Katz JA, Bridenbaugh PO, Knarr DC, Helton SH, Denson DD. Pharmacodynamics and pharmacokinetics of epidural ropivacaine in humans. AnesthAnalg. 1990 Jan;70(1):16-21.
11. Finucane, Brendan & Sandler, Alan & Mckenna, Jocelyne & Reid, Dennis & Milner, Anna-Lee & Friedlander, Mark &Muzyka, David & O'Callaghan-Enright, Sheila & Chan, Vincent. . A double-blind comparison of ropivacaine 0.5%, 0.75%, 1.0% and bupivacaine 0.5%, injected epidurally, in patients undergoing abdominal hysterectomy. Canadian journal of anaesthesia = Journal canadiend'anesthésie. 1996:43. 442-9.