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To Compare 10mcg of Dexmedetomidine and 30mcg of Clonidine as an Adjuvant to 15mg of Intrathecal Isobaric Ropivacaine 0.75% for Elective Lower Abdominal and Lowerlimb Surgeries

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ABSTRACT

The present study was undertaken to compare the efficacy and the safety of dexmedetomidine and clonidine as an intrathecal adjuvant to isobaric 0.75% ropivacaine. 100 Patients involved in this study were randomly divided into two groups, Group C and Group D of 50 patients each. Group C received intrathecal 0.75% isobaric Ropivacaine 15mg (2 mL)+30mcg Clonidine in 0.5 mL normal saline (Total 2.5 mL). Group D received intrathecal 0.75% isobaric Ropivacaine 15mg (2mL)+10mcg Dexmedetomidine in 0.5 mL normal saline (Total 2.5mL).The mean time taken from the onset of sensory blockade to regression to T12 level was longer in Group D (199.7±34.067 minutes) as compared to Group C (151.7±22.533 minutes). This difference was statistically significant. (p value=0.001). The trend of increase in VAS score was earlier in Group C as compared to Group D, which was statistically significant between 90 to 210 minutes post operatively (p value<0.05). The mean time to first post operative analgesic requirement was longer in Group D as compared to Group C. In Group C, the mean time taken was 267.6±32.736 minutes, whereas in Group D it was 356.9±58.43 minutes. This result was statistically significant (p value<0.001). The mean time taken to achieve complete motor blockade in Group C was 12.66±1.520 minutes whereas in Group D it was 11.14±1.807 minutes. On comparing the groups this difference was statistically significant. The trend in return of Modified Bromage Score to 0 was earlier in Group C as compared to Group D which was statistically significant between the two groups at 0 min, 30 mins, 60 mins, 90 mins and 120 minutes post operatively.(p value<0.05).The mean time to full motor recovery was longer in Group D as compared to Group C. In Group C the mean time taken was 197.5±25.659 minutes, whereas in Group D it was 290.9±50.21 minutes. This result was statistically significant (p value<0.001). There was a statistically significant fall in systolic and diastolic blood pressure within Groups C and D from 5 minutes to 180 minutes. However, on comparing the two groups, this fall in blood pressure was not statistically significant.(P>0.05). On comparing the side effects, there was no statistically significant difference between Group C and Group D in the incidence of nausea, vomiting, hypotension, or bradycardia (p>0.05).

OPEN ACCESS

Key Words

Dexmedetomidine, isobaric ropivacaine, clonidine, lowerlimb surgeries

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INTRODUCTION

Pain is one of the most noxious stimuli a living being perceives, the most painful moments are the surgical procedure. With the advances in the field of anesthesia various techniques are being used to alleviate pain in the peri-operative period. Intrathecal anaesthesia has replaced general anesthesia as the first-line method to provide anaesthesia for lower abdominal and lower limb surgeries as it is very economical and easy to administer. Local anaesthetics are the commonest agents used for spinal anaesthesia. Ropivacaine is a new local anaesthetic which combines the anaesthetic potency and long duration of action of bupivacaine with a toxicity profile intermediate between bupivacaine and lidocaine and has advantage of faster recovery. The efficacy of ropivacaine is similar to that of bupivacaine and levobupivacaine for peripheral nerve blocks and, although it may be slightly less potent than bupivacaine when administered epidurally or intrathecally, equi-effective doses have been established. Thus, ropivacaine, with its efficacy, lower propensity for motor block and reduced potential for CNS toxicity and cardiotoxicity, appears to be an important option for regional anaesthesia and management of postoperative and labour pain[1]. A number of adjuvants to local anaesthetics have been used intrathecally to prolong the intraoperative as well as postoperative analgesia[2]. Spinal adjuvants decrease the dose of local anaesthetics, improve the quality of intraoperative anaesthesia without altering the height of the block, provides effective postoperative analgesia. The discovery of opioid receptors and endorphins in spinal and supraspinal regions soon led to the use of spinal opiates. Morphine was the first opioid administered intrathecally to augment neuraxial blocks[3]. Opioid analgesic drugs produce intense, prolonged analgesic action without gross autonomic changes, loss of motor power or impairment of sensation other than pain when injected into subarachnoid or epidural space[3]. Morphine can produce serious side effects like late and unpredictable respiratory depression, post operative nausea and vomiting, pruritus and urinary retention[4]. Recently a-2 adrenoreceptor agonists have been used as adjuvants to local anaesthetic agents because of their sedative, analgesic and haemodynamic stabilizing effect. They have been found to prolong the duration of spinal block following intrathecal administration[5]. Clonidine, an a-2 adrenergic agonist, has a variety of different actions. Oral clonidine was used to prolong lidocaine spinal anaesthesia[6], tetracaine spinal anaesthesia[7], bupivacaine spinal anaesthesia[8], ropivacaine spinal anaesthesia[9]. Hypotension was more pronounced after oral than intrathecal clonidine[8]. Addition of intrathecal clonidine to bupivacaine prolongs analgesia and decreases morphine consumption postoperatively >oral clonidine. Clonidine has antihypertensive properties and the ability to potentiate the effects of local anaesthetics[10]. Clonidine has been shown to result in prolongation of the sensory blockade and reduction in the amount or concentration of local anesthetic required to produce post operative analgesia[11]. Dexmedetomidine also an a-2 adrenergic agonist is pharmacologically related to clonidine and is the most recent agent in this group approved by FDA in 1999 for the use in humans as short term medication (<24 hrs) for analgesia and sedation in intense care unit. Its unique properties render it suitable for sedation and analgesia during the whole of perioperative period. Various studies have also found that dexmedetomidine can decrease the haemodynamic response to laryngoscopy and intubation[12]. Dexmedetomidine is a highly specific and selective alpha-2 adrenoceptor agonist with 8 times more affinity for alpha-2 adrenoceptor than clonidine. The ratio of alpha-1: alpha-2 receptor binding selectivity for dexmetomidine is 1:1620 compared to 1:220 for clonidine[12]. While clonidine has been used as an adjuvant to local anaesthetic agents for intrathecal purposes with successful results, there are only a few studies available for dexmedetomidine for such studies[13,14,15]. Till recently dexmedetomidine was not available in India though it is being used in other countries since many years. Since it has been recently introduced in India and not many studies have been done in India regarding its use as an adjuvant to local anaesthetic agents for intrathecal purpose hence there is a need to study its effectiveness as a spinal adjuvant Hence the purpose of this study was to compare 10mcg of dexmedetomidine and 30mcg of clonidine as an adjuvant to 15mg of intrathecal isobaric ropivacaine 0.75% for elective lower abdominal and lowerlimb surgeries.

MATERIALS AND METHODS

The study was a hospital based study conducted on 100 consenting patients undergoing lower abdominal and lower limb surgeries under intrathecal anesthesia who fulfilled a pre-determined inclusion and exclusion criteria. This study was done after Ethical Committee approval and written informed consent obtained from all the patients included in the study. The pre-determined inclusion and exclusion criteria were as follows.

Inclusion Criteria:

- Patients aged between 18-60 years, both male and female
- Patients belonging to ASA status I-II.
- Scheduled for elective lower abdominal and lower limb surgeries.
- Informed consent from all patients.

Exclusion Criteria:
- Patient's refusal for consent.
- Emergency surgery cases.
- Distortion of Spinal anatomy.
- Superficial lumbar site infection.
- Pregnant women.
- Patients with coagulopathy.
- Allergy to study medications.
- Patients with ASA III or greater.

Study Design: This study was done in a prospective double blinded randomized manner. Patients were randomized into the following groups with 50 patients in each group. Group C patients received isobaric ropivacaine 0.75% 15mg+30mcg clonidine Group D patients received isobaric ropivacaine0.75% 15mg+10mcg dexmedetomidine In both groups, total volume of the drug was exactly same and the dilution was with normal saline.

Pre Anaesthetic Evaluation: Patients included in the study underwent thorough preoperative evaluation which included the following.

History: History of underlying medical illness, previous surgery, anaesthetic exposures and hospitalization was enquired. Patients were advised overnight starvation.

Physical Examination:
- General condition of the patient.
- Vital signs.
- Height and weight.
- Examination of Cardiovascular, Respiratory, CNS and vertebral columns.
- Airway assessment.

Investigations: Hb, PCV, BT, CT, RFT, Blood sugar, ECG, CXR, Platelet count, Blood grouping and cross matching were done. Patients who satisfied the inclusion criteria were explained about the nature of the study and the anaesthetic procedure. Written informed consent was obtained from all patients included in the study.

How Double Blinding Was Done: Allotment of cases was done by computerized lots. The Consultant who made the drug combination took no further part in the study. I performed the subarachnoid block and made intraoperative observations. Postoperatively in the recovery room, observations were done.

Technique: In the OT, appropriate equipment for airway management and emergency drugs were kept ready. An IV line was secured and IV Midazolam 1 mg was given to the patient. After 30 minutes the patient was shifted from preoperative room to OT. The horizontal position of the operating table was checked and patient shifted on to the table and intravenous fluid started. NIBP, SPO2, ECG leads were connected to the patient. Pre-operative baseline systolic and diastolic BP, PR, SpO2 and RR were recorded. SAB and observations were made in all the patients involved in the study. Under strict aseptic precautions a midline lumbar puncture was performed using a 25 G Quincke needle in sitting position/lateral decubitus position. The patient was then immediately placed in supine position. The time for intrathecal injection was considered as 0 and the following parameters were observed- sensory blockade, motor blockade, duration of analgesia and sedation.

Intraoperative Observations:
Vital Parameters: HR, BP and SpO2 were noted every 5 minutes till 30 minutes, then every 15 mins, till the end of surgery. We had defined the following parameters for the study.
- Hypotension was defined as systolic blood pressure < 30% of baseline value or <90 mm Hg, whichever was lower.
- Tachycardia was defined as heart rate >25%of baseline value.
- Bradycardia was defined as heart rate <60 beats/min with associated hemodynamic instability.
- An arrhythmia was defined as any rhythm other than normal sinus rhythm.

Assessment of Sensory Blockade:
- The level of sensory block was tested every 5 min by pin-prick method using a hypodermic needle till the peak level had been established. The time of onset was taken from the time of injection of drug into subarachnoid space to loss of pin prick sensation till T10 level. The highest level of sensory block was also noted.

Assessment of Motor Blockade:
- Motor block of the lower extremities was assessed according to the Modified Bromage Scale, every 5 min until achievement of Modified Bromage Score of 3 or up to a maximum of 15 min, whichever was earlier.

Modified Bromage Scale:
- Grade 0-Full flexion of knees and feet.
- Grade 1-Just able to flex knees, full flexion of feet.
- Grade 2-Unable to flex knees, but some flexion of feet possible
- Grade 3-Unable to move legs or feet.

Adverse Events: Side effects such as nausea, vomiting, hypotension, bradycardia or any other complications were recorded.

Postoperative Observations:

Assessment of Sensory Blockade: The duration of sensory blockade was documented by assessing the level of sensory block every 30 min, as the time from onset to the time of return of pinprick sensation to T 12 dermatomal level.

Assessment of Motor Blockade: Motor block was assessed and graded at the end of surgery and then at 30 min intervals, using the Modified Bromage Scale. Time until complete return of lower extremity motor function (Score=0) was noted.

Assessment of Analgesia: Pain was assessed by Visual Analogue Self Rating Method (Visual Analog Scale VAS), that was first advocated by Revill and Robinson in 1976. The VAS consists of a 10 cm line anchored at one end by a label such as" No pain'' and at the other end by a label such as the "Worst Pain Imaginable" or "Pain As Bad As Can Be". The patient simply marks the line to indicate the pain intensity and the provider then measures the length of the line to mark a point on a scale. All the patients were instructed about the VAS to point out the intensity of pain on the scale, at the time of each measurement., 0= no pain and 10= worst pain. Patients were assessed for pain every 30 min after surgery until they complained of moderate pain requiring supplemental analgesia. For this study, moderate pain was defined as a VAS score of 4 or more. Duration of effective analgesia was measured as the time from intrathecal drug administration to the patient's first request for analgesic administration, recorded in minutes.

Intraoperative Management:

- Hypotension is treated with a bolus administration of 300 ml of Ringer's solution over 5 min and 6 mg of intravenous ephedrine.
- Bradycardia is treated with 0.6 mg of intravenous atropine.

Statistical Analysis: Statistical analysis was done using SPSS (Statistical Package for the Social Sciences) 21 software. Data was expressed as either mean±standard deviation or numbers and percentages. The demographic data of patients were studied for both the groups. The means of the continuous variables were compared between the two groups using analysis of variance ANOVA. The demographic data were analyzed using either Student's t-test or Chi- square test. Quantitative data was analyzed by student's t test and qualitative data was analyzed by Chi-square test. The P value of<0.05 is considered statistically significant.

RESULTS AND DISCUSSIONS

Group C: Patients received 2ml of 0.75% Isobaric Ropivacaine (15mg), with 30µg clonidine in 0.5 ml of normal saline intrathecally.

Group D: Patients received 2ml of 0.75% Isobaric Ropivacaine (15mg), with 10µg Dexmedetomidine in 0.5 ml of normal saline intrathecally.

- In Group C, the mean age was 37.96 years with a standard deviation of 13.99, whereas in Group D, it was 38.88 years with a standard deviation of 12.09.

Table 1: Type of Surgery by Groups

Surgery	group c	group d
Inguinal hernia	18	18
Thr	5	5
Dhs	9	9
Orif	8	8
Pfn	10	10
Total	50	50

The mean duration of surgery is 101.04±24.18 mins in Group C and 107.42±27.50 mins in Group D. There is no statistically significant difference between the groups. P=0.220 (>0.05).

In Group C, 30 patients (60%) had a maximum sensory level of T6, 8 patients (16%) had a level of T8, and 12 patients (24%) had a level of T10.

- In Group D, 2 (4%) had a maximum sensory level of T5,32 patients (64%) had a level of T6, 6 patients (12%) had a level of T8, 10 patients (20%) had a level of T10.
- There was no statistically significant difference between the groups (p value >0.05) in the maximum sensory level achieved.
- In Group C the mean time taken was 151.7 minutes with a standard deviation of 22.533 minutes.
- In Group D the mean time taken was 199.7 minutes with a standard deviation of 34.067 Minutes.
- On comparing the two groups, rate of regression of sensory block to T 12 was faster with group C compared to Group D. Group D had a longer duration of sensory block and the difference was found to be statistically significant (p value <0.05).

Post operatively patient's pain was graded according to VAS score and rescue analgesia was given at a VAS score of 4.

- The mean baseline VAS score in Group C was 0.12 with a standard deviation of 0.44, whereas in Group D it was 0.10 with a standard deviation of 0.51.
- On statistical analysis there was significant difference between the two groups at 90 mins, 120 mins, 150 mins, 180 mins and 210 mins post operatively (p value < 0.05).

Table 2: trends in Visual Analogue Scale (vas) Score Among Subjects

	GROUP – C				GROUP – D				C vs D
Time (Min)	N	Mean	SD	p-value	N	Mean	SD	p-value	p-value
Base line	50	0.12	0.44	0.224	50	0.10	0.51		
30	50	0.20	0.64	0.0312	50	0.18	0.69	0.83	0.834
60	50	0.24	0.77	0.000	50	0.20	0.76	0.219	0.000
90	50	1.06	1.24	0.000	50	0.52	1.09	0.022	0.006
120	50	2.48	0.97	0.000	50	1.7	1.22	0.000	0.022
150	43	3.44	0.63	0.000	46	2.37	1.24	0.000	0.000
180	21	3.76	0.44	0.000	37	2.3	0.81	0.000	0.000
210	5	4.00	0.00	0.000	37	3	0.75	0.005	0.000
240					27	3.07	0.73	0.000	
270					19	3.47	0.51	0.000	
300					10	3.4	0.52	0.000	
330					6	4.0	0.00	0.000	
360									

Table 3: Trends in Modified Bromage Score Among Subjects

	GROUP-C				GROUP-D				C vs D
Time (Min)	N	Mean	SD	p-value	N	Mean	SD	p-value	p-value
Base line	50	2.68	0.512		50	3	0.285		0.0002
30	50	1.54	1.034	0.000	50	2.92	0.395	0.2485	0.000
60	37	0.783	0.886	0.000	50	2.46	0.761	0.000	0.000
90	18	0.333	0.594	0.000	48	1.89	0.972	0.000	0.000
120	5 0	0	0.000	41	1.46	1.051	0.000	0.000	
150				31	1.25	1.063	0.000		
180				22	1	1.069	0.000		
210				12	1.166	1.029	0.0001		
240				8	1.125	0.834	0.0003		
270				6	0.833	0.752	0.0008		
300				4	0.5	0.577	0.0026		
330				2	0	0	0.000		
360									

Table 4:Trends in Heart Rate Among Sbjects

Time (Min)	GROUP-C				GROUP-D				C vs D p-value
	N	Mean	SD	p-value	N	Mean	SD	p-value	
Base line	50	88.36	12.46	Group c	50	89.86	13.92	Group D	0.572
5	50	91.22	13.97	0.141	50	89.56	13.34	0.913	0.545
10	50	91.62	14.10	0.112	50	87.36	13.69	0.419	0.153
15	50	92.98	14.93	0.079	50	87.56	13.50	0.404	0.101
20	50	90.78	13.98	0.182	50	85.32	18.25	0.165	0.0986
25	50	91.82	14.78	0.104	50	88.66	14.55	0.674	0.284
30	50	92.24	18.146	0.108	50	87.86	12.29	0.448	0.161
45	50	88.96	15.667	0.416	50	88.40	11.04	0.563	0.837
60	50	90.28	16.366	0.255	50	88.20	12.38	0.530	0.475
75	50	89.46	15.499	0.348	50	88.82	12.04	0.690	0.818
90	50	90.92	15.568	0.183	50	88.66	12.21	0.648	0.421
105	50	86.56	16.604	0.271	50	88.04	11.17	0.473	0.602
120	50	87.46	17.356	0.383	50	87.92	12.71	0.469	0.880
135	50	85.12	16.400	0.134	50	87.18	11.74	0.301	0.472
150	50	83.84	15.892	0.058	50	86.40	11.09	0.172	0.353
165	50	83.86	14.092	0.047	50	85.90	11.24	0.121	0.426
180	50	84.30	12.831	0.056	50	87.32	11.15	0.317	0.212

Table 5: Distribution of Subjects According to Side Effects

Side Effect	Group C		Group D		P-value (Two-tailed)
	No.	%	No.	%	
Nausea	1	2.0	2	4.0	0.5591
Vomiting	1	2.0	2	4.0	0.5591
Hypotension	2	4.0	3	6.0	0.6474
Bradycardia	1	2.0	2	4.0	0.5591

Clonidine has been used as an adjuvant to local anaesthetic agents for intrathecal purposes with successful results, there are only a few studies available for dexmedetomidine for such studies. Dexmedetomidine has been recently introduced in India and hence there is a need to compare its effectiveness as a spinal adjuvant to ropivacaine. Based on the above studies, a 30 µg dose of Clonidine and a 10 µg dose of Dexmedetomidine intrathecally were considered as safe and appropriate for this study.

Hence, the purpose of this study was to evaluate and compare the effects of adding clonidine versus dexmedetomidine with isobaric 0.75% ropivacaine in spinal anaesthesia for elective lower abdominal and lowerlimb surgeries. Availability in the parentral form of α-2adrenergic agonists have made it possible to study their effect along with local anaesthetics. While clonidine has been studied extensively there are only a few studies available for intrathecal use of dexmedetomidine. Hence in our study we have selected intrathecal route as the route of administration. The present study was conducted on 100 patients of ASA Grade I or II of either sex, undergoing elective lower abdominal and lower limb surgeries under spinal anaesthesia. The patients were randomly allocated into two groups of C and D. Group C consisted of 50 patients who received 2ml of 0.75% isobaric ropivacaine+30 µg of Clonidine in 0.5 ml normal saline (Total of 2.5 ml) and Group D consisted of 50 patients who received 2ml of 0.75% isobaric ropivacaine+10 µg of Dexmedetomidine in 0.5 ml of normal saline (Total of 2.5 ml) intrathecally. The demographic characteristics of the two groups were comparable with no significant difference between age, gender. The mean age of patients in Group C was 37.96±13.99 (years) and the mean age of patients in Group D was 38.88±12.09 (years). There was no statistically significant difference between the mean ages of the two groups. Regarding gender in both Groups C and D, 76% of the patients were male and 24% were female and there was no statistically significant difference. The type of surgeries performed, ASA status were also identical in both the groups. These parameters were kept identical in both the groups to avoid variations in intraoperative and postoperative outcome of patients. The mean time to onset of sensory analgesia till T10 was 6.1+1.515 minutes in Group C and 3.68+1.077 minutes in Group D. Onset time was faster in Group D and the difference was statistically significant (P<0.05).This observation correlates with other recent studies. In this study there was no statistically significant differences in the maximum sensory level achieved, between the groups.(P>0.05). In Group C, 30 patients (60%) had maximum sensory level till T6, 8patients (16%) had till T8,12patients (24%) had till T10. In Group D, 2patients (4%) had maximum sensory level till T5, 32patients (64%) had till T6,6 patients (12%) had till T8 and 10 patients (20%) had till T10. Maximum level of block was T5 with dexmedetomidine group. Median peak sensory level was T6 in both the groups. The mean time taken for the sensory block to regress to T12 from the time of onset of sensory blockade was 151.7 minutes in group C compared to the mean time of 199.7 minutes in group D. In this study, the rate of regression of sensory blockade to T12 level was faster in Group C as compared to Group D. On comparing the two groups, Group D had a longer duration of sensory block, and the difference was found to be statistically significant (p value <0.05).This observation correlates with other studies. In this study Post operatively patient's pain was graded according to VAS score and rescue analgesia was given at a VAS score of 4.The mean baseline VAS score in Group C was 0.12 with a standard deviation of 0.44, whereas in Group D it was 0.10 with a standard deviation of 0.51.On statistical analysis there was significant difference between the two groups at 90 mins, 120 mins, 150 mins, 180 mins and 210 mins post operatively (p value <0.05).The trend of increase in VAS score was earlier in Group C as compared to Group D. The mean time taken to first postoperative analgesic requirement was 267.6 min in group C and 356.9 min in group D. Group D had a longer duration of analgesia than Group C, which was statistically significant (p<0.05). This implies a better quality of analgesia and a greater reduction in the need for analgesics postoperatively. This observation correlates with other studies. In our study, the mean time taken to achieve complete motor block was 12.66+1.520 min in Group C and in Group D it was 11.14+1.807 min. It was significantly lower in Group D and this difference was statistically significant.(p<0.05). This observation correlates with studies done In our study motor blockade was assessed post operatively using Modified Bromage Score (MBS) every 30 minutes till full return of motor function, i.e. score=0. On statistical analysis, there was significant difference of MBS between the two groups at 0 minutes, 30 minutes, 60 minutes, 90 minutes and 120 minutes post operatively. The trend of return of Modified Bromage Score to 0 was earlier in Group C as compared to Group D. In our study, the time to full return of motor function was assessed as the time elapsed from the onset of motor blockade to the return of full motor function, i.e. MBS=0. In Group C, the mean time taken was 197.5 minutes with a standard deviation of 25.659, whereas in Group D it was 290.9 minutes with a standard deviation of 50.21.Group D had a statistically significant longer duration of motor block. Motor recovery was faster with clonidine group. (P<0.05).This observation correlates with other recent studies. In our study, the two groups did not differ significantly with

respect to heart rate at any interval. One patient(2%) in Group C and 2 patients (4%) in Group D had bradycardia, which was not statistically significant (p>0.05%). In our study, in Group C there was a continuous fall in systolic blood pressure from 5 mins to 180 mins intra-operatively and this fall was statistically significant. In Group D, there was a continuous fall in systolic blood pressure from 25 mins to 180 mins intra-operatively and this fall was statistically significant. However, on comparing the two groups, the fall in S.B.P was not statistically significant (p>0.05). In our study, in Group C there was a continuous fall in diastolic blood pressure from 5 minutes to 180 minutes intra-operatively and this fall was statistically significant. In Group D, there was a continuous fall in diastolic blood pressure from 5 mins to 180 minutes intra-operatively, which was statistically significant. However, on comparing the two groups, the fall in D.B.P was not statistically significant (p>0.05). In our study, there were no patients in either group who had a decrease in saturation (SpO2< 96%) at the various recording times and the mean SpO2 was similar amongst the two groups, without any statistically significant difference. (P>0.05) Two patients (4%) in Group D complained of nausea but one patient (2%) in Group C. The difference was not statistically significant. (P>0.05) One patient(2%) in Group C and 2 patients (4%) in Group D had bradycardia, which was not statistically significant (p>0.05%). (P>0.05)

CONCLUSION

From the present study it can be concluded that intrathecal dexmedetomidine in the dose of 10mcg with 2ml of isobaric ropivacaine, 0.75%.

- Decreases the onset time for sensory blockade.
- Decreases the onset time for motor blockade.
- Produces higher level of sensory blockade.
- Produces prolonged postoperative analgesia.
- Produces prolonged sensory blockade.
- Produces prolonged motor blockade.

when compared with intrathecal clonidine in the dose of 30mcg with 2ml of isobaric ropivacaine, 0.75%, in patients undergoing elective lower abdominal and lower limb surgeries. Results of our study provides strength and adds evidence to the studies which showed that need for analgesic requirements for post-operative pain relief had reduced in surgeries done under spinal anaesthesia with addition of adjuvants to anaesthetics and the use of alpha2 agonists significantly reduced the demand for opioids and reduced the post-operative nausea. Based on the observations above, it can be concluded that dexmedetomidine is a better intrathecal adjuvant to ropivacaine when compared with clonidine for providing early onset and excellent quality of prolonged post-operative analgesia with stable cardiorespiratory parameters.

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