Original Article

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Comparative Evaluation of Hyperbaric 0.5% Bupivacaine-Clonidine and only 0.5% Bupivacaine for Spinal Anaesthesia

Rahul Kore*, Vinayak Sirsat, Satish Deshpande*****

Abstract

Pain of any kind is distressing to the life style of human being and relief of pain becomes mandatory all the time. Intraoperative as well as postoperative pain is of concern as it results in morbidity and mortality. Postoperative pain relief is beneficial in al aspects and hence efforts have been going on to introduce new techniques or newer drugs to relieve pain. Intrathecal use of adjuvant with conventional local anaesthetic agents has proved to be beneficial in this regard. Clonidine is an imidazoline derivative with α_2 adrenergic agonist activity has analgesic effect at spinal level mediated by post-synoptically situated α_2 adreno-receptors in dorsal horn of spinal cord. It has intrinsic analgesic effect to control postoperative pain with potentiating quality of subarachnoid block. 100 patients of either sex were divided into 2 equal groups. In group A 0.5% Bupivacaine 3cc with normal saline was administered and in group B 0.5% Bupivacaine 3 cc with 30 µgm of Clonidine with normal saline was administered intrathecally. It was observed that, in Clonidine group, the onset of sensory block, highest dermatome level, onset of motor block, duration of sensory block, duration of motor block, time for 2 segment regression of sensory block, total duration of surgical anaesthesia, quality of sensory and motor block sedation score, requirement of analgesic supplementation was superior in Clonidine group as compare to control group. The haemodynamic parameters as mean changes in pulse rate and systolic blood pressure and incidence of intraoperative and postoperative complications was negligible in both groups. Thus it was concluded that, intrathecal Clonidine is efficient adjuvant along with 0.5% Bupivacaine intrathecally as it improves the quality of sensory block and provides satisfactory prolonged postoperative analgesia with haemodynamic stability and minimum side effects. It is recommended to use Clonidine along with local anaesthetic intrathecally for lower abdominal surgeries requiring postoperative pain relief.

Keywords: Subarachnoid Block; 0.5% Bupivacaine; Adjuvant; Inj. Clonidine; Duration and Quality of Block.

Introduction

Pain is derived from Latin word 'poena' means penalty or punishment. Pain is one of the most common and distressing effects of disease and all medical persons has to work for relief of pain. Pain is agony and relieving pain is ecstasy. Surgical operative procedures results in intraoperative as well as postoperative pain and anaesthesiologists are mainly concerned with the pain relief. In spite of many advances in medical science, many patients are reluctant to undergo operative procedures due to fear of pain. Postoperative pain results in patients' discomfort, prolonged hospital stay, poor outcome and greater use of health care resources.

Since introduction of spinal anaesthesia by August Bier in 1898 has gained popularity due to simple technique, minimum skill, optimal operative conditions and minimum postoperative morbidity. It is economically efficient alternative to general anaesthesia for operative procedures below umbilicus [1,2,3]. Wide range of local anaesthetics can be used for spinal anaesthesia that allow control

Author's Affiliation:
*Assistant Professor **Associate Professor ***Professor & Head, Department of Anaesthesiology, Government Medical College, Latur (Maharashtra).

Corresponding Author:
Satish Deshpande, Professor & Head, Department of Anaesthesiology, Government Medical College, Latur- 413512, Maharashtra.
E-mail: satdeshpande@rediffmail.com

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over time of onset, level of block and duration of spinal anaesthesia.

For spinal anaesthesia, 5% Lignocaine is now almost replaced by 0.5% Bupivacaine hydrochloride. It has many advantages over Lignocaine as less dose requirement, prolonged duration of action and some postoperative analgesia. Vasopressors were added to local anaesthetic agents for prolonging the duration of action of subarachnoid block. With the identification of opiate-peptides, endorphins and existence of opiate receptors within spinal cord, new concept in treatment of pain has been opened. Addition of opioids to local anaesthetics is very commonly practiced to prolong the duration of block. Opioids reduce the toxicity and cardiovascular effects of local anaesthetic agents but may produce respiratory depression, urinary retention or nausea and vomiting, etc.

Clonidine hydrochloride an imidazole derivative with α_2 adrenergic agonist activity and has analgesic effect at spinal level mediated via post-synaptically situated α_2 receptors in dorsal horn of spinal cord [4]. Clonidine has intrinsic analgesic effect after intrathecal or epidural administration and serves for intraoperative and postoperative pain relief. It prolongs the duration of action of local anaesthetics and has potent anti-nonciceptive property [6]. It has also anti-hypertensive property as well as potentiates the effects of local anaesthetics, sedative, analgesic and anti-emetic drugs. Small doses of intrathecal Clonidine along with local anaesthetics was useful for labor analgesia and othopaedic surgeries with minimum side effects [5-9]. In the present study, the efficacy of intrathecal Clonidine in small doses along with 0.5% hyperbaric Bupivacaine hydrochloride was evaluated in patients under going elective infra umbilical and lower limb surgeries.

Material and Methods

A prospective, randomized double blind study was carried out to evaluate the efficacy of intrathecal Clonidine as an adjuvant to 0.5% Bupivacaine for infra umbilical and, lower limb surgeries. 100 patients of either sex belonging to ASA grade I and II in age range of 20 to 60 years were selected. These patients were divided into 2 equal groups of 50 patients each depending upon drug administered intrathecally. Group A patients (control) received Inj. 0.5% Bupivacaine 3.0 cc with 0.5 cc normal saline. Group B patients received Inj. 0.5% Bupivacaine 3 cc with Inj. Clonidine 30 µgm). 2 cc Clonidine and 0.3 cc normal saline intrathecally.

The patients systemic medical disorders of respiratory, cardiovascular, central nervous system and other contraindications of subarachnoid block were excluded from the study. All patients were evaluated preanaesthetically for fitness of anaesthesia and valid informed consent was obtained from the patients and the relatives. All necessary investigations were carried out. Preoperative baseline pulse rate, blood pressure, respirator rate oxygen saturation were noted. Under all septic precautions lumbar puncture was performed in left lateral position at L_3-L_4 or L_4–L_5 inter space. In group 0.5% Bupivacaine 3 cc with normal saline 0.5 cc and in group B 0.0% Bupivacaine 3 cc and 0.2 cc (30 µgm) and 0.3 cc normal saline were administered intrathecally. Intraoperatively, the onset of sensory block, onset of motor block, highest dermatome level, duration of sensory block, duration of motor block were noted. Intraoperatively Quality of surgical anaesthesia was evaluated as excellent, good, fair or poor. Postoperative pain was assessed with Visual analogue scale at every 30 minutes to 12 hours. Sedation score was noted as Grade 0,I,II and III. All patients were monitored for the changes in mean pulse rate, systolic and diastolic blood pressure, oxygen saturation through intraoperatively at various time intervals. Postoperative sedation and analgesic supplementation was given according to patient's demand. All patients were monitored for intraoperative as well as postoperative complications or side effects related to technique of anaesthesia and drugs administered. All observations were statistically evaluated for significance by Z test or Chi square test.

Observations

100 patients of either sex were divided into 2 equal groups of 50 patients each as Group A and Group B.

Group A (50 patients) – Received Inj. Bupivacaine 0.5% 3 cc + 0.5 cc Normal saline intrathecal.

Group B (50 patients) – Received inj. Bupivacaine 3 cc + Inj. Clonidine (30 µgm) 0.2 cc + 0.3 cc normal saline intrathecal.

The Demographic Data was as Shown in Table No. I

Mean age in group A was 43.56 ± 5.35 yrs and in group B 43.02 ± 6.75 yrs, mean height in group A was 154.2 ± 4.13 cm and in group B 154.12 ± 3.12 cm and mean weight in group A was 54.04 kg and in group B 54.41 ± 5.12 in group B patients. There was no

significant difference in these parameters in both groups.

Sex distribution was a shown in Table 2.

There were 21 male and 29 female patients in group A and 19 male and 21 female patients in group B. There was no statistical difference in both groups as sex distribution was concerned.

These patients under went following operative procedures as shown in Table 3.

The distribution of operative procedures was almost identical in both groups and there was no significant difference.

Intraoperatively, various sensory block parameters were evaluated and noted in both groups. The onset of sensory block was noted as time from intrathecal administration of drug to time required for loss of pin prick sensation. Time from administration of drug to time required for maximum time for sensory block was noted. In both groups maximum dermatome level achieved was noted after 10 minutes. Time from administration of drug to time required for 2 segment regression of sensory block was noted. The duration of sensory block was noted as time from administration of drug to complete loss of pin prick sensation. These parameters were as shown in Table 4.

The mean onset of sensory block was 4.15 ± 0.2 minutes in group I and 2.05 ± 0.59 mints in group B patients. The time for maximum sensory block was 7.84 ± 0.68 mints in group I and 5.95 ± 0.86 mints in group B. Mean sensory level was T_7 ($T_5 - T_9$) in group A and T_6 ($T_5 - T_9$) in group B patients. The time for 2 segment regression of sensation was 91.52 ± 7.25 mints in group A and 138.16 ± 6.74 mints in group B. Total duration of sensory block was 195.05 ± 9.76 mints in group A and 220.60 ± 6.22 mints in group B. On statistical analysis, mean onset of sensory block, time for 2 segment regression, mean duration of sensory block and highest dermatome level were significantly superior in group B patients as compared to group A patients. Group B was observed to be better in all parameters of sensory block than group A.

Motor block parameters in both groups were as shown in Table 5.

The onset of motor block was 6.29 ± 0.65 mints in group A and 3.17 ± 0.62 mints in group B patients. The duration of motor block was 159.96 ±± 5.73 mints in group A an 198.6 ±± 9.21 mints in group B patients. Thus the onset of motor block was significantly earlier and duration of motor block was significantly prolonged in group B patients as compared to group A.

The quality of motor block was assessed by modified Bromage scale as 0, 1, 2, 3 in both groups as shown in Table 6.

Complete motor paralysis as score 3 was noted in 92% of patients in group B as compared to 66% of patients in group A. Score 2 was noted in 28% of patients in group A and 8% of patients in group A. Quality of motor block was significantly excellent in more number of patients of group B as compared to group A.

The quality of surgical anaesthesia (analgesia) was assessed according to surgeon's satisfaction as excellent, good, inadequate and poor in both groups as shown in Table 7.

The quality of surgical anaesthesia was significantly excellent in more number of patients (90%) in group b as compared to 62% in group A patients. The quality was good in 30% of patients of group A and 8% of patients of group B. It was inadequate in 8% of patients in group A and only 2% in group B patients. Thus the quality of surgical anaesthesia was significantly better in group B patients as compared to group A.

Sedation score was noted as shown in Table 8. Sedation score was 1-2 in maximum number of patients 74% in group B patients and it was 0 in 92% of patients of group A. Sedation score was variable from 0,1,2 in group B patients and it was 0,1 in group b patients.

At the end of procedure or in case of prolonged operative procedure sedation or supplementation with general anaesthesia was required more frequently in more number of patients of group A as compared to group B patients.

Postoperative analgesic demand was considerably delayed in group B (mean time 368.12 ± 21.30 mints) patients as compared to (mean time 194.48 ± 10.82 mints) group A patients.

The changes in mean pulse rate at various time intervals in both groups were as shown in Table No. X.

There was no significant difference in mean pulse arte at various time intervals in both groups as compared to base line readings. There was no significant difference in mean pulse rate at a particular time interval amongst the groups. Intraoperatively as well as postoperatively mean pulse rate seems to be significantly unaltered in both groups.

Mean systolic blood pressure at various time intervals was as shown in Table 9.

There was no statistically significant difference in mean systolic blood pressure at various time intervals in both groups as compared to base line readings. There was no significant difference in mean systolic blood pressure in group A and B at various time intervals. Intraoperatively as well as postoperatively upto 10-12 hours there was no significant difference in mean systolic blood pressure in both groups.

Subjectively pain was assessed with visual analogue scale in both groups as shown in Table 11.

In group A, mean visual analogue scale (VAS) score was 3.46 ± 0.79 maximum after 180 minutes while in group B. VAS score was 3.26 ± 0.79 maximum at 360 minutes. Thus maximum pain score was significantly delayed in group B as compared to group A patients.

The analgesic supplementation requirement was delayed in group B as compared to group A patients. Mean VAS score was found to be lower in group B patients at all time intervals upto 12 hours after spinal anaesthesia.

Intraoperatively as well as postoperatively the incidence of side effects related to technique of anaesthesia or drug administered was observed as shown in Table 12.

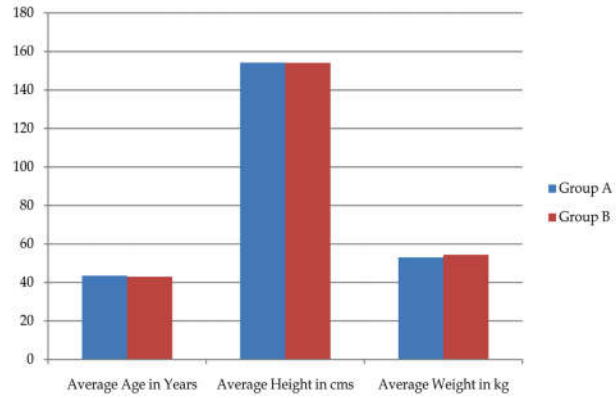
Overall the incidence of side effects was negligible and no patient had any dreadful complication related to technique of anaesthesia or drug administered in both groups.

Table 1: Showing demographic data

Parameters	Group A	Group B	T value	P value
Age in Years	43.56 ± 5.34	43.02 ± 6.75	0.45	P > 0.05
Height in cms	154.2 ± 4.13	154.12 ± 3.62	0.11	P > 0.05
Weight in kg	53.04 ± 5.79	54.4 ± 5.18	0.58	P > 0.65

Table 2: Showing sex distribution

Gender	Group A	Group B	χ^2	P value
Male	21 (42%)	19 (38%)		
Female	29 (58%)	31 (62%)	0.16	P > 0.05
Total	50 (100%)	50 (100%)		



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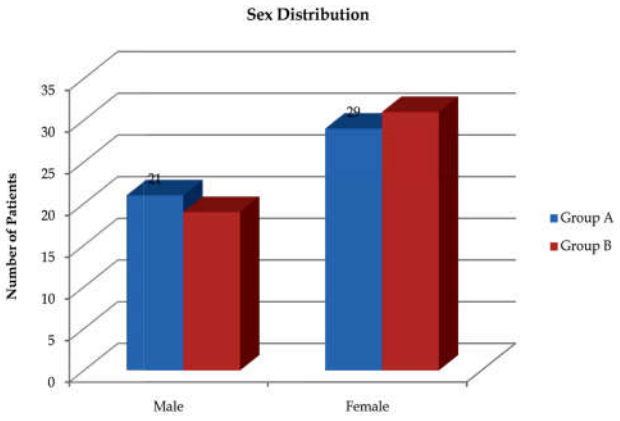


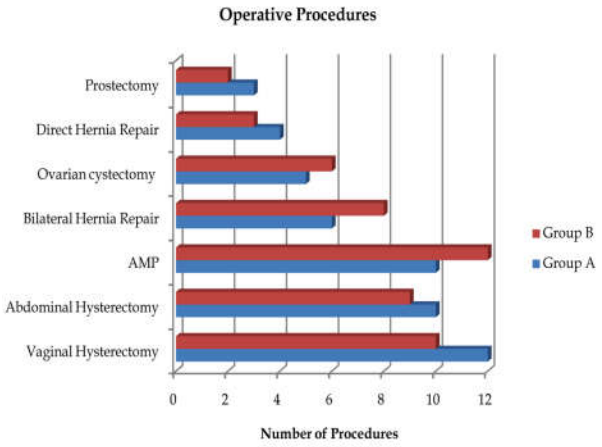
Graph 2:

Table 3: Showing operative procedures

Operative procedures	Group A	Group B
Vaginal Hysterectomy	12 (24%)	10 (20%)
Abdominal Hysterectomy	10 (20%)	9 (18%)
AMP	10 (20%)	12 (24%)
Bilateral Hernia Repair	6 (12%)	8 (16%)
Ovarian cystectomy	5 (10%)	6 (12%)
Direct Hernia Repair	4 (8%)	3 (6%)
Prostectomy	3 (6%)	2 (4%)
Total	50 (100%)	50 (100%)

Table 4: Showing sensory block parameters

Parameters (Mean)	Group A	Group B	t value	p value
Onset of sensory block (mints)	4.15 ± 0,2	2.13 ± o.81	15.95	P < 0.001
Time for maximum sensory block (mints)	7.01 ± 0.68	5.95 ± 0.81	12.63	P < 0.001
Maximum sensory level	T_7 (T_5-T_9)	T_6 (T_4-T_8)		
Time for 2 segment regression (mints)	91.52 ± 7.25	138.16 ± 6.74	61.88	P < 0.001
Duration of sensory block (mints)	195. 05 ±9.76	220.6. ± 6.22	52.27	P < 0.001



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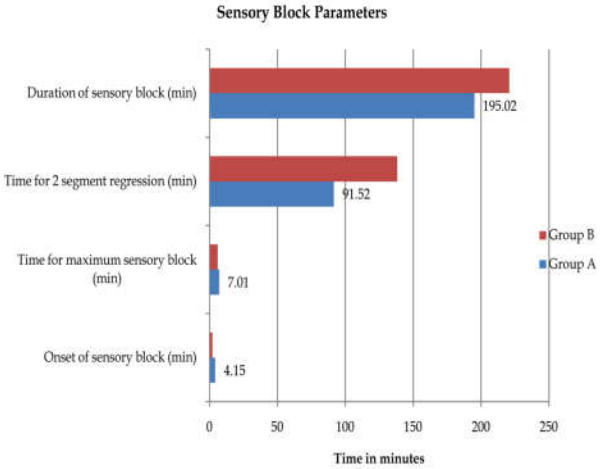


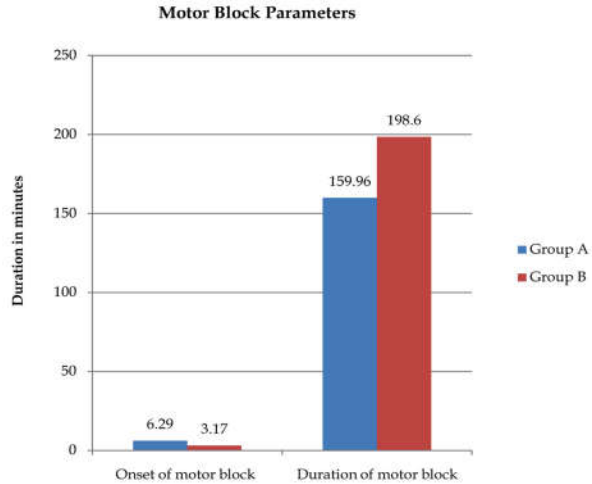
Graph 4:

Table 5: Showing motor block parameter

Parameters	Group A	Group B	t value	p value
Onset of motor block (mints)	6.29 ± 0.15	3.17 ± 0.62	24.56	P < 0.001
Duration of motor block	159.96 ± 5.73	198.6 ± 9.21	25.18	P < 0.001

Table 6: Showing quality of motor block

Bromage Scale	Group A	Group B	Z value	p value
0	0 (0%)	0 (0%)	--	--
1	3 (6%)	1 (2%)	1.02	p>0.05
2	14 928%)	4 (8%)	2.69	P<0.05
3	33(66%)	46(92%)	3.36	P<0.001



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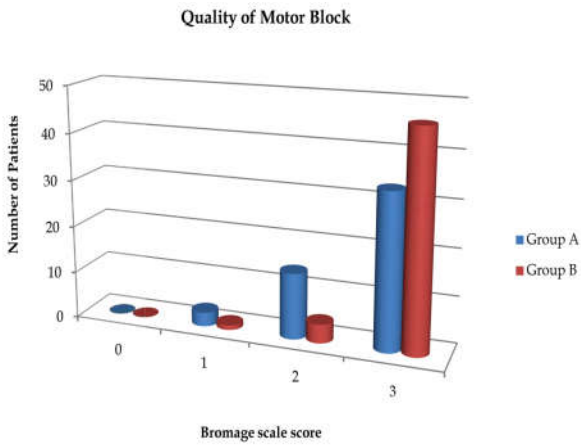


Graph 6:

Table 7: Showing quality of surgical anaesthesia

Quality	Group A	Group B	Z value	p value
Excellent	31(62%)	13(26%)	4.46	p<0.001
Good	15(30%)	4(8%)	2.46	p<0.05
Inadequate	4(8%)	1(2%)	2.60	P<0.05
Poor	--	--	--	--

Table 8: Showing sedation score in both groups

Sedation Score	Group A	Group B	t value	p Value
0	46(92%)	13(26%)		
1	4(8%)	25(50%)	8.37	p<0.001
2	--	12(24%)		
3	--	--		

Table 9: Showing mean pulse rate at various time intervals

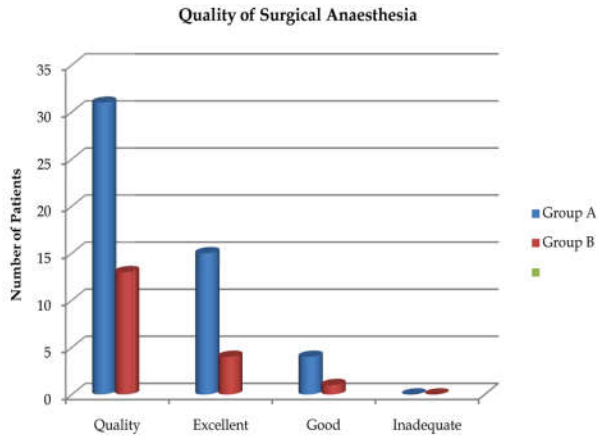
Time in minutes	Group A	Group B	t value	p value
0	83.10 ± 16.97	82.12 ± 15.44	0.132	>0.05
5	80.40 ± 13.68	81.16 ± 11.24	0.462	>0.05
10	80.74 ± 13.08	80.96 ± 10.74	0.374	>0.05
20	80.20 ± 11.24	79.74 ± 10.28	0.241	>0.05
30	81.38 ± 13.08	80.72 ± 10.85	0.242	>0.05
45	81.88 ± 10.80	81.48 ± 8.87	0.242	>0.05
60	82.06 ± 12.52	81.20 ± 10.88	0.210	>0.05
90	82.38 ± 12.13	82.36 ± 11.01	0.331	>0.05
120	82.04 ± 11.33	81.50 ± 10.67	0.241	>0.05
180	81.74 ± 11.28	80.42 ± 10.06	0.142	>0.05
240	81.32 ± 11.80	79.68 ± 9.57	0.113	>0.05
300	81.60 ± 11.39	80.50 ± 9.75	0.164	>0.05
360	81.90 ± 12.25	81.40 ± 10.66	0.252	>0.05
420	81.98 ± 10.92	81.56 ± 10.60	0.253	>0.05
540	81.98 ± 10.75	81.22 ± 10.60	0.212	>0.05
720	81.98 ± 10.86	80.32 ± 10.04	0.122	>0.05

Table 10: Showing mean systolic blood pressure at various time intervals

Time in minutes	Group A	Group B	t value	p value
0	120.28 ± 9.20	121.24 ± 12.51	0.187	>0.05
5	115.32 ± 8.77	115.24 ± 15.57	0.336	>0.05
10	108.36 ± 7.69	106.24 ± 11.16	0.214	>0.05
20	110.96 ± 6.80	109.24 ± 6.96	0.301	>0.05
30	105.24 ± 7.95	105.24 ± 7.47	0.259	>0.05
45	105.56 ± 5.44	105.60 ±5.17	0.164	>0.05
60	103.12 ± 8.07	100.80 ± 6.68	0.078	>0.05
90	104.00 ± 8.00	101.08 ± 6.16	0.090	>0.05
120	106.04 ± 8.56	104.00 ± 7.64	0.261	>0.05
180	108.72 ± 7.05	106.44 ± 8.89	0.213	>0.05
240	111.24 ± 7.25	112.28 ±7.47	0.084	>0.05
300	111.76 ± 4.93	110.80 ± 2.91	0.480	>0.05
360	111.36 ± 5.41	109.08 ± 2.89	0.072	>0.05
420	113.28 ± 4.98	111.68 ± 1.91	0.214	>0.05
540	112.40 ± 3.75	110.84 ± 2.68	0.196	>0.05
720	113.60 ± 5.70	112.08 ± 3.21	0.287	>0.05

Table 11: Showing mean visual analogue scale

Time in Minutes	Group A	Group B	t value	p value
180	3.46 ± 0.79	0.12 ± 0.32	0.000	< 0.05
240	1.34 ± 0.52	0.28 ± 0.53	0.000	< 0.05
300	1.52 ± 0.71	1.42 ± 0.67	0.234	< 0.05
360	2.76 ± 0.82	3.26 ± 0.80	0.001	< 0.05
420	3..72 ± 0.59	1.14 ± 0.68	0.000	< 0.05
540	4.00 ± 0.67	1.40 ± 0.64	0.000	< 0.05
720	2.42 ± 0.73	1.90 ± 0.61	0.000	< 0.05



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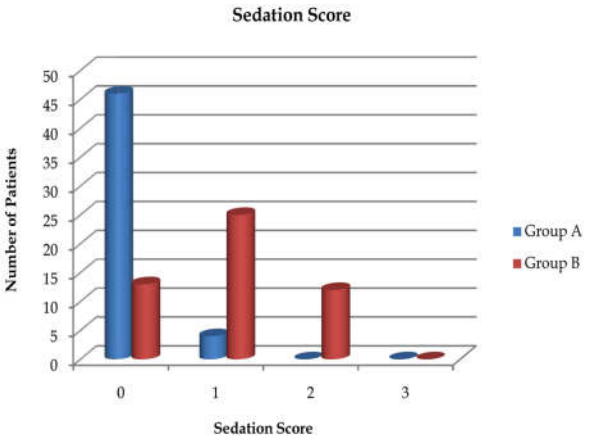

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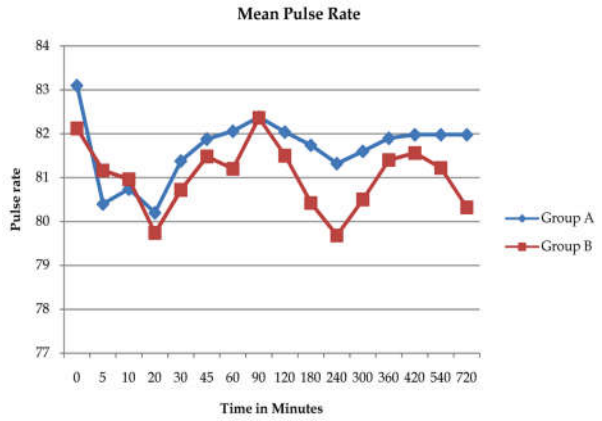

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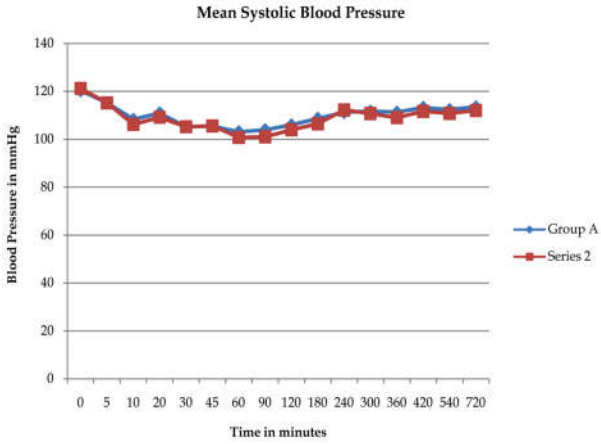
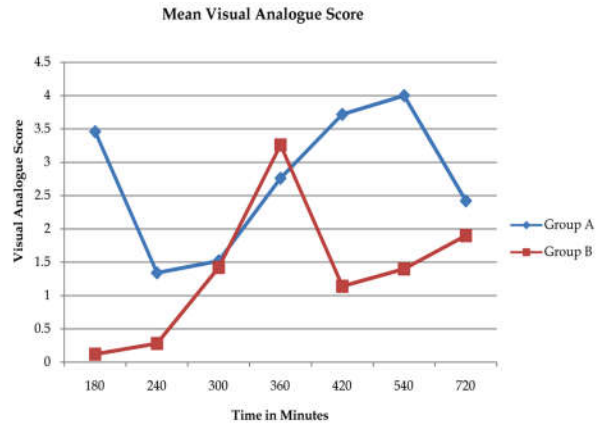


Graph 10:

Table 12: Showing incidence of side effects

Side Effects	Group A	Group B	χ^2	p value
Bradycardia	2(4%)	3(6%)		
Hypotension	1(2%)	1(2%)		
Dryness of mouth	1(2%)	1(2%)	0.94	> 0.75
Nausea	3(6%)	4(8%)		
Respiratory Depression	--	--		
Itching	--	--		
Neurological Deficit	--	--		



Graph 11:

Discussion

Relief of pain during operative procedure and in postoperative period is one of the mainstays of balanced anaesthesia. Relief of pain in postoperative period is being concerned and painless postoperative period will definitely decrease morbidity and mortality. Spinal anaesthesia remains one of the basic techniques in modern anaesthesia despite of variable popularity since its introduction. With the aim of improving quality and period of postoperative analgesia many drugs have been tried intrathecally along with local anaesthetic agents. All these drugs

tried were having their own merits and demerits. No one drug was found to be satisfactory in all respects and mainly availability of new drugs was the main problem.

Clonidine is one of the popular and commonly used adjuvant in spinal anaesthesia for relief of postoperative pain. It is selective partial agonist for α_2 adreno receptors. It is known to increase both sensory and motor block when administered along with local anaesthetic in subarachnoid block [11]. The analgesic effect following its intrathecal administration is mediated spinally through activation of post synaptic α_2 receptors in substantia gelatinosa of spinal cord [12,13]. There is accumulation of high drug concentration in the vicinity of α_2 adreno-receptors in spinal cord and it works by blocking the conduction of C and A delta fibers, increases potassium conductance in isolated neurons and intensifies conduction block of local anaesthetic agents [14]. Paqueron X etal [15] have used Clonidine along with 0.5% Bupivacaine for subarachnoid block to evaluate the onset of sensory block, spread of block, duration of sensory and motor block.

In the present study, onset of sensory block was 2.05 ±0.59 mints in group B and 4.15 ± 0.72 mints in group A patients. The onset of sensory block was significantly quicker in Clonidine group as compared to plane Bupivacaine or control group. Sexena H etal [16], Dobrydnjov I etal [10], Benhamon D etal [17], Filos KS [14] and Nishiyama T etal [18] have also observed quicker onset of sensory block with intrathecal Clonidine as adjuvant to 0.5% Bupivacaine. Intrathecal administration of Clonidine and Bupivacaine combination produce synergistic analgesic effects on both acute thermal and inflammation induced pain with decreased side effects. Wolf M etal [19] reported that firing frequency of trains of action potentials in topically firing neurons is reduced at low concentration of Clonidine (10µgm). After a dose of 1µgm/kg intrathecal Clonidine, the peak CSF level was about 6 µmol. These concentrations are within the range of required levels and partially block voltage-gated Na^+ and K^+ channels and to shift the steady state inactivation curve to more negative potentials. Our observations for onset of sensory block, spread of block, duration of sensory and motor block can be explained on above ground.

The time achieve maximum sensory block was 7.84 ± 0.68 mints in group A and 5.95 ± 0.61 mints in group B. This was significantly quicker in Clonidine group B as compared to group A. Our findings coincide with findings of Grandle R.P et al [20] and Seah YS et al [21].

Maximum sensory level was $T_7(T_5–T_9)$ in group A and $T_6(T_4–T_8)$ in group B patients. The level of analgesia was almost similar in both group. Our findings correlate with Grandhe R B et al [20], Sethi B S et al [22] and Saxena H et al [16].

In the present study mean time for 2 segment regression in group B was 178.16 ± 6.74 mints significantly more than 91.5 ± 7.15 mints in group A patients. Thus the regression from analgesia was slower in Clonidine as compared to control group. Almost same findings were there of Saxena H et al [16] and Sethi B S et al [22].

Mean duration of sensory block was 195.04 ± 9.76 mints in group A and 280.60 ± 6.22 mints in group B patients. There was significantly prolonged duration of sensory block in group B patients as compared to group A. Our findings coincide with findings of Kothari N et al [23], Dobrudnjov L et al [10], Tuijl V et al [8], Sethi BS et al [22], Heo G J et al [23] and Grandhe RP et al [20]. Our observations can be explained on the same grounds as given for onset of sensory block.

In the present study, mean onset of motor block was significantly quicker in group B 3.17 ± 0.62 than group A 6.29 ± 0.65 mints. The mean duration of motor block was 159.96 ± 5.73 mints in group A significantly less as compared to group B 198.96 ± 5.73 mints. Our results corresponds with Saxena l H et al [16], Kanzi GE et al [24], Sethi BS et al [22], Dobrydnjov L et al [10], Strebel S et al [12], Rheek et al [25], Niemi et al [6] and DeNegri P et al [26]. It is stated that intrathecal Clonidine in combination with local anaesthetic potentiated the intensity and duration of motor block. α_2 adreno-receptors agonists induce cellular modification in the ventral horn of spinal cord and facilitate the local anaesthetic action. These effects are dose and position dependent.

The quality of surgical anaesthesia was excellent in more number of patients of group B as compared to group A patients. The same were findings of many of above authors. They observed that intrathecal Clonidine increased the spread of the sensory block and decreased pain and analgesic supplementation requirement.

In the present study, the sedation score was better in group B patients as compared to group A patients. Saxena H et al [47], Sethi BS et al [44], Chiari A et al [51], Strebel S et al [12], etc have also observed better sedation score with intrathecal Clonidine. The sedation with Clonidine is mediated through its action on locus ceruleus. This brain stem nucleus is associated with variety of physiologic regulatory

processes involving regulation of sleep and wakefulness and is inhibited by α_2 adrenergic agonist via G-protein mediated mechanism that inhibits adenyllate cyclase. The requirement of supplementation as sedation, analgesia or general anaesthesia was significantly less in group B patients as compared to group A.

Haemodynamic parameters as the changes in mean pulse arte, mean systolic blood pressure at various time intervals during intraoperative as well as postoperatively were non significant in both groups. Above many authors have also observed that there are dose dependent haemodynamic variations during intraoperative and postoperative period in their studies. Our observations coincide with above authors observations as we have used minimum doses of drugs and there were negligible changes in these haemodynamic parameters.

In group A, visual analogue score was maximum of 3.46 ± 0.19 mits at 180 minutes and in group B it was 3.26 ± 0.8 mints after 360 minutes. Thus it was observed that the requirement of analgesic supplementation was quite delayed in group B patients as compared to group A patients. Our results were comparable with results of Dobrydnjov L et al [13], Strebel S et al [18] and many others.

The incidence of dreadful complications related to technique of anaesthesia or drugs was negligible in both groups as we taken due precautions and doses of drugs were minimum. Hence the incidence of complications and side effects was less in both groups in our study.

Summary

The present study was prospective, randomized double blind carried out to evaluate the efficacy of intrathecal Clonidine as an adjuvant to 0.5% Bupivacaine for subarachnoid block. 100 patients of either sex with ASA grade I and II posted for elective operative procedures infra umbilical under spinal anaesthesia were studied. All these patients were evaluated preanaesthesia for fitness and informed valid consent was obtained from each patient. These 100 patients were divided into 2 equal groups of 50 patients according to intrathecal administered drugs. All patients received Inj. Ranitidine 50 mg Iv and Inj. Ondensetron 4 mg as premedication and preloading with 10-15 ml/kg of Ringer lactate. Under all aseptic precautions lumbar puncture was performed with 23G LP needle at L_4-L_5 or L_3-L_4 interspace. Group A patients received 0.5 Bupivacaine 3 cc with 0.5 cc of normal saline and group B received 0..5% Bupivacaine 3 cc with 0.2 cc of inj. Clonidine (30µgm) and 0.3 cc of normal saline intrathecally. Intraoperatively all patients were monitored for changes in mean pulse rate, mean systolic blood pressure and postoperatively upto 12 hours. All patients were observed for sensory and motor block parameters. It was noted that, mean onset of sensory block was significantly earlier mean 2.05 ± 0.59 mints in group B as compared to control group A 4.15 ± 0.72 mints. Mean onset of motor block was 3.17 ± 0.62 mints in group B and 6.29 ± 0.65 mints in group A. Maximum highest sensory level was T_6 in group B and T_7 in group A in maximum number of patients. Mean time for 2 segment regression of sensory level was significantly more 178.16 ± 6.74 mints in group B as compared to 91.52 ± 7.25 mints in group A patients. Mean duration of sensory block was 195.04 ± 9.76 mints in group A and more prolonged 280.60 ± 6.22 mints in group B patients. Mean duration of motor block was 198.60 ± 9.21 mints in group B and 159.96 ± 5.73 mints in group A patients. It was observed that 92% of patients in group B had complete motor block as compared to 66% of patients in group A. Quality of surgical anaesthesia was excellent in 90% of patients in group B and 62% of patients in group A. Sedation score was more in group B as compared to Group A. Sedation and analgesic supplementation was required earlier in group A patients as compared to group B patients. There was no significant difference in haemodynamic changes as in mean pulse rate and mean systolic blood pressure in both groups at various time intervals intraoperatively as well as postoperatively. Mean visual analogue scale was significantly less in group B as compared to group A. There were minimal intraoperative or postoperative side effects in both groups.

Conclusions

From the present study it was concluded that, Inj. Clonidine is an efficient adjuvant along with 0.5% Bupivacaine intrathecally for infra umbilical and lower abdominal surgeries under subarachnoid block. Intrathecal Clonidine significantly produces quicker onset of sensory and motor block, prolonged duration of sensory and motor block, higher dermatome level, delayed time for 2 segment regression, prolonged total duration of surgical anaesthesia. With Clonidine there is less requirement of sedation and analgesic requirement intra as well as postoperatively. It provides excellent quality of sensory block and

satisfactory motor block. It provides haemodynamic stability with less incidence of intraoperative and postoperative complications. Hence intrathecal Clonidine in dose of 30 µgm along with 0.5% Bupivacaine is safe and effective to intensify the quality of sensory block and prolongs the duration block and avoids sedation and analgesic supplementation for more than 12 hours postoperatively.

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