COMPARISON OF SINGLE BOLUS DOSE OF DEXMEDETOMIDINE WITH BOLUS PLUS CONTINUOUS INFUSION OF DEXMEDETOMIDINE ON CHARACTERISTIC OF SPINAL ANAESTHESIA WITH HYPERBARIC BUPIVACAINE

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ABSTRACT

BACKGROUND

This was a prospective randomised double-blind study to compare the single bolus dose of I.V. dexmedetomidine (0.5 mcg/kg) diluted in 10 mL normal saline given slowly before spinal anaesthesia followed by continuous infusion of I.V. dexmedetomidine at the rate of 0.2 mcg/kg/hr. with only single bolus dose of I.V. dexmedetomidine (0.5 mcg/kg) diluted in 10 mL normal saline given slowly over 10 mins. before spinal anaesthesia to find out the better technique, which has all the desired effects like prolongation of sensory and motor block and prolong postoperative analgesia with minimal side effects like hypotension and bradycardia.

MATERIALS AND METHODS

60 elective surgical patients posted for below umbilical abdominal surgeries and lower limb surgeries with ASA grade I and II with age, weight and height between 20-70 years, 40-70 kg and 150 to 170 cm respectively were selected. Patient was randomly allotted in two group of 30 patients. Patients in both the groups received I.V. dexmedetomidine bolus at the rate of 0.5 mcg/kg diluted in 10 mL normal saline slowly over 10 mins. using infusion pump prior to spinal anaesthesia with 3 mL 0.5% bupivacaine. After spinal anaesthesia, patient in Group D received infusion of dexmedetomidine at the rate of 0.2 mcg/kg/hr. (100 mcg dexmedetomidine diluted in 50 mL normal saline, i.e. 2 mcg/mL) by infusion pump till the end of surgery. In Group N, patient received infusion of 50 mL normal saline at predetermined rate till end of surgery. The onset of sensory and motor block, duration of sensory and motor block, haemodynamic stability and quality of surgical anaesthesia, intraoperative complications, postoperative analgesia and side effects were recorded.

RESULTS

Our study concluded that I.V. supplementation of bolus followed by continuous infusion of Inj. Dexmedetomidine prolong the duration of sensory and motor block induced with spinal bupivacaine 0.5% hyperbaric. It provides the stable haemodynamic condition with satisfactory anaesthetic condition with significant decrease in the requirement of intraoperative supplementation of sedative and analgesic drugs. It prolongs the duration of analgesia and decreases early requirement of analgesic drugs and does not increase side effects like hypotension, bradycardia, nausea and vomiting, shivering, pruritus. It also provides satisfactory arousable sedation without causing respiratory depression.

CONCLUSIONS

I.V. bolus plus continuous infusion of Inj. Dexmedetomidine is better alternative to I.V. bolus dexmedetomidine for prolonging sensory block, motor block and duration of analgesia induced with intrathecal hyperbaric bupivacaine.

KEYWORDS

Dexmedetomidine, Bupivacaine (Heavy), Lower Umbilical and Lower Abdominal Surgery, Sensory and Motor Blockade, Spinal Anaesthesia.

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BACKGROUND

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage. If pain is agony, relieving pain is ecstasy. Subarachnoid block is a widely used regional anaesthesia technique particularly advantageous for lower abdominal and lower limb surgeries as it is safe and easy to administer. Hyperbaric bupivacaine is one of the most commonly used local anaesthetic agents for spinal anaesthesia.

Addition of adjuncts, for example, epinephrine, opioids may enhance the quality and prolong the duration of spinal anaesthesia. Dexmedetomidine is a highly selective α-2 adrenoreceptor agonist (1620:1 for α2:α1), is 7-10 times more selective α2 agonist than clonidine and has half-life of

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2-3 hours. It provides sedation, analgesia and has anaesthetic sparing effect with little respiratory depression.[1] Many studies showed that when dexmedetomidine was added to intrathecal bupivacaine it resulted in prolongation of the duration of spinal anaesthesia, but intrathecal use of dexmedetomidine was not approved in many countries. When given intravenously before spinal anaesthesia or as a loading dose followed by continuous infusion during surgery, it prolongs the duration of spinal anaesthesia with minimal side effects.[2,3]

This study was conducted to compare the single bolus dose of I.V. dexmedetomidine (0.5 mcg/kg) diluted in 10 mL normal saline given slowly over 10 mins. before spinal anaesthesia followed by continuous infusion of I.V. dexmedetomidine at the rate of 0.2 mcg/kg/hr. with single bolus dose of I.V. dexmedetomidine (0.5 mcg/kg) diluted in 10 mL normal saline given slowly over 10 mins. before spinal anaesthesia followed by infusion of 50 mL normal saline to find out the better technique, which has all the desired effects like prolongation of sensory and motor block and prolong postoperative analgesia with minimal side effects like hypotension and bradycardia.

THE AIM OF THIS STUDY

The Present Study was undertaken with the following Aims and Objectives

1. To evaluate the beneficial effects of bolus with bolus plus continuous infusion of I.V. dexmedetomidine on characteristic of subarachnoid block induced with intrathecal Inj. Bupivacaine 0.5% (heavy) in Group N and Group D, respectively.
2. To compare onset and duration of sensory block in Group N and Group D.
3. To compare onset and duration of motor block in Group N and Group D.
4. To study level of sedation among study groups in Group N and Group D.
5. To compare haemodynamic parameter like heart rate, systolic blood pressure, mean arterial pressure, SpO_2 among study groups in Group N and Group D.
6. To compare the postoperative analgesia in the study groups in Group N and Group D.
7. To evaluate intraoperative complications in study Group N and Group D.

MATERIALS AND METHODS

The present study was conducted in the Department of Anaesthesiology in tertiary care hospital following approval of study by institutional ethical committee. It was a prospective, randomised control, double-blinded study.

Sample Size

Sample size of 30 in each group was estimated using nMaster software version 2.0 based on the study by SS Harsoor et al[3] who concluded that intravenous dexmedetomidine prolongs bupivacaine spinal analgesia considering duration of analgesia was 222.8±123.4 mins. in Group D and 138.36±21.62 mins. in Group C with α error of 10% and power of the study of 80%.

Inclusion Criteria

Patients who give consent for participation in study, elective surgical patients posted for below umbilical abdominal surgeries and lower limb surgeries with ASA grade I and II with age, weight and height between 20-70 years, 40-70 kg and 150 to 170 cm, respectively.

Exclusion Criteria

Patient having contraindication to spinal anaesthesia (Like coagulopathy, infection at the site of injection), neurological diseases, cardiac conditions, with known drug allergy, ASA grade III and higher were excluded from the study.

Detailed preanaesthetic evaluation was done of all the 60 patients who had given consent, which included detailed history, general and systemic examination to rule out presence of any major illness and all relevant investigations.

Patients were kept nil by mouth from 10 p.m. night prior to the procedure and Tab. Ranitidine 150 mg h.s. and 6 a.m. in morning of procedure and Tab. Diazepam 10 mg at night. Patients were explained about the procedure and written informed consent was obtained from them. Preprocedure Heart Rate, Systolic Blood Pressure, Mean Arterial Pressure, Oxygen Saturation, Sedation Score was noted in operation room by attaching multipara monitor, intravenous access established with 20 G intracath, preloading was done with 10 mL/kg of Ringer lactate solution.

Patients in both the groups received I.V. dexmedetomidine bolus at the rate of 0.5 mcg/kg diluted in 10 mL normal saline slowly over 10 mins. using infusion pump prior to spinal anaesthesia with 3 mL 0.5% Inj. Bupivacaine and haemodynamic monitoring was done in this period at the interval of 5 minutes till 10 minutes. Patients were randomly divided in 2 groups by seal envelope technique.

Study Groups

Group N = Patients received infusion of 50 mL normal saline.
Group D = Received infusion of dexmedetomidine at the rate of 0.2 mcg/kg/hr. (100 mcg dexmedetomidine diluted in 50 mL normal saline, i.e. 2 mcg/mL) by infusion pump after spinal anaesthesia till the end of surgery.

Spinal anaesthesia was given with 3 mL of injection bupivacaine 0.5% (heavy). Haemodynamic parameters was noted and taken as baseline and time was noted as '0' hour. Then, according to grouping of the patient done, infusion was started. This infusion is made by third anaesthesiologist so that patient and observer remain blind.

Sensory Block Assessment

Sensory level was determined by pinprick method using 24 gauge needles. Patients were tested every 30 seconds at one fixed dermatome level, i.e. L1. The maximum level of sensory block achieved by each patient within initial 20 minutes was noted and also time required to achieve MSL was recorded. Thereafter, sensory level was checked every

15 minutes till recovery. As level T10 was achieved, surgeons were allowed to clean, drape and start surgery. After maximum sensory level is achieved, sensory level was checked for two segment regression every 10 minutes. Total duration sensory block was defined as loss of pinprick sensation at L1 up to reappearance of pinprick sensation at L1.

Motor Block Assessment

Motor block was assessed at every 30 seconds from '0' hour as per the Bromage Scale of motor block until the highest level was stabilised. The duration of motor block was defined as the time between onsets of motor block up to the time of reappearance of movement of ankle (Bromage Scale 2).

"Bromage Scale".[4]

- Bromage 0: The patient is able to move the hip, knee and ankle.
- Bromage 1: The patient is unable to move the hip, but is able to move the knee and ankle.
- Bromage 2: The patient is unable to move the hip and knee, but is able to move the ankle.
- Bromage 3: The patient is unable to move the hip, knee and ankle.

Haemodynamic parameters were recorded every 5 minutes for 10 minutes during infusion of bolus of Inj. Dexmedetomidine before giving spinal anaesthesia. Thereafter, haemodynamic parameters, sedation score and oxygen saturation were monitored every 2 minutes till 10 minutes, every 5 minutes from 10 mins. to 30 minutes, every 10 minutes from 30 mins. till the end of surgery. Intraoperative and postoperative sedation score were recorded at regular interval till full consciousness is regained by the patient according to Ramsay Sedation Score.

Systolic blood pressure <30% of baseline value or Systolic blood pressure <80 mmHg is taken as hypotension and treated with I.V. bolus fluids and I.V. mephentermine (3-6 mg). If hypotension persisted after three bolus dose of Inj. Mephentermine, infusion of I.V. Dopamine was started. Heart rate <50/mins. is taken as bradycardia and treated with I.V. bolus of 0.3-0.6 mg Inj. Atropine given until heart rate is above 60/mins. The incidence of adverse effects such as nausea, vomiting, shivering, pruritus, respiratory depression, hypotension and bradycardia were recorded.

Postoperative pain was assessed using VAS. Rescue analgesic drug such as NSAID (Inj. Diclofenac) was given IM when the patient complained pain (VAS ≥3). Time taken from '0' hour till requirement of first dose of rescue analgesic drug was defined as duration of analgesia. This duration was noted in both the groups.

STATISTICAL ANALYSIS

Variation in haemodynamic parameters at different time present in each group was assessed by performing one way repeated measure ANOVA.

Changes in haemodynamic parameters at different time point between two groups was compared by performing Mann-Whitney Test for non-normalise variables. Categorical variables were compared by performing Pearson's chi-square test and baseline parameters and baseline parameter were compared between two groups by independent t-test. (P-value <0.05) was considered as statistically significant analysis of the data. Analysis was performed by using STATA VERSION NO. 13.

OBSERVATIONS AND RESULTS

Both the groups were comparable in respect of age, sex, weight and height of the patients. Demographic data, age, sex, weight and height were comparable and it had no influence on the outcome of study.

The change in haemodynamic parameter during bolus dexmedetomidine was found to be nonsignificant in both the Group N and Group D. Mean pulse rate in Group N was 81.61±7.46 per mins., while in Group D was 68.66±3.83 per mins. The difference between them was found to be statistically highly significant (p-value: <0.0001). There were no incidence of bradycardia in either groups and none of the patients required Inj. Atropine.

The mean systolic blood pressure in Group N was 96.63±1.93 mmHg, while in Group D, it was 97.4±4.27 mmHg. Both the groups were compared statistically and it was found to be nonsignificant. The mean blood pressure in Group N was 68.38±2.46 mmHg and in Group D was 65.49±2.36 mmHg. The difference was highly significant (P-value: <0.0001). Hypotension was found in 2 patients of Group N and in 8 patients of Group D and treated with bolus dose of Inj. Mephentermine. None of the patient required infusion of Inj. Dopamine. Overall, haemodynamic parameters were stable in both the groups.

Postoperative shivering occurred in 7 patients of Group N and in none of the patients of group D. No incidence of nausea, vomiting occurred in both the Groups. When the patients were compared statistically in terms of shivering, difference was statistically significant (p-value: 0.011).

17 patients in Group N required intraoperative sedation with Inj. Midazolam and 17 patients required analgesia with Inj. Pentazocine while none of the patients in Group D required intraoperative sedation and analgesia.

The mean sedation score in Group N was 2.55±0.15, while in Group D mean sedation score was 2.68±0.15. When the mean sedation score was compared in two groups, the difference was found to be statistically highly significant (P-value: 0.0022). The patients in both the groups were not over sedated and can be easily arousable. When both the groups were compared statistically, the difference was found to be highly significant (P-value: <0.001). None of the patient in both the groups required Inj. Ketamine or required general anaesthesia.

	Group-N		Group-D		P-Value
Weight (KG)	55.46	5.93	57.0	4.02	0.2624,NS
Height (CM)	156.96	4.01	158.36	3.28	0.1447,NS
Duration of Surgery (mins.)	111.67	9.12	110.0	9.59	0.7838,NS

Table 1. Demographic Characteristics of Patients

Above data indicates that Group N and Group D are statistically comparable with regard to age, weight, height and duration of surgery of patients.

Sl. No.	Character of Spinal Block	Group-N	Group-D	p-Value
1.	Onset of sensory block (mins.) - Time to reach L1	99.0±8.84	98.46±8.34	0.8110, NS
2.	Maximum sensory level	7.33±1.09	7.46±1.27	0.6659, NS
3.	Time for maximum sensory level (mins.)	6.7±0.95	6.5±1.07	0.4486, NS
4.	Time of two segment regression (mins.)	128.5±10.59	149.66±10.33	<0.0001, HS
5.	Duration of sensory blockade	141.43±10.64	164.33±10.72	<0.0001, HS

Table 2. Characteristics of Sensory Block

Above data indicates the sensory block assessment in both the groups in which the time of two segment regression and duration of sensory block was found to be highly significant.

Sl. No.	Character of Motor Block	Group-N	Group-D	P-value
1.	Onset of motor blockade (mins.)	6.1±1.51	6.2±1.54	0.8009, NS
2.	Duration of motor block (mins.)	161.16±8.27	190.67±13.37	<0.0001, HS

Table 3. Characteristics of Motor Block

Above data in the table indicates characteristics of motor block in both the groups in which duration of motor block was significantly prolonged in group D.

	Group-N	Group-D
MEAN±SD	183.60±9.99	238.0±12.28
P-VALUE	<0.0001,HS	

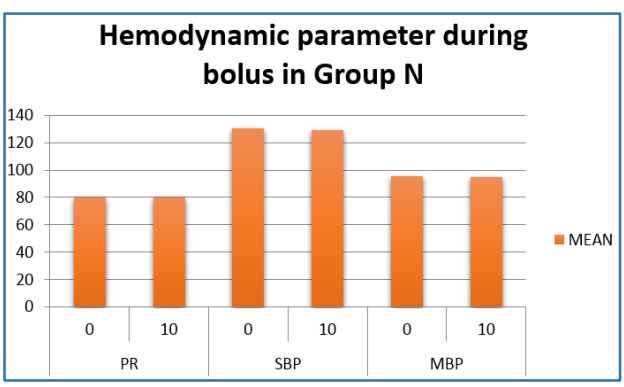
Table 4. Duration of Analgesia (Mins.)

Above data in the table shows duration of analgesia in both the groups, which was significantly prolonged in group D.

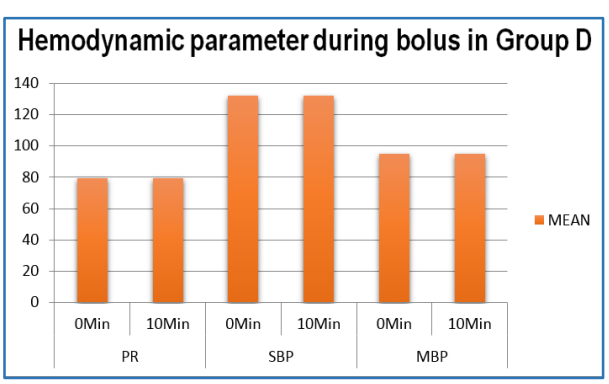
Complication	Group-N	Group-D	p-Value
Hypotension	2	8	0.178,NS
Bradycardia	-	-	-
Nausea and Vomiting	-	-	-
Pruritus	-	-	-
Respiratory Depression	-	-	-

Table 5. Intraoperative Complications in Two Groups

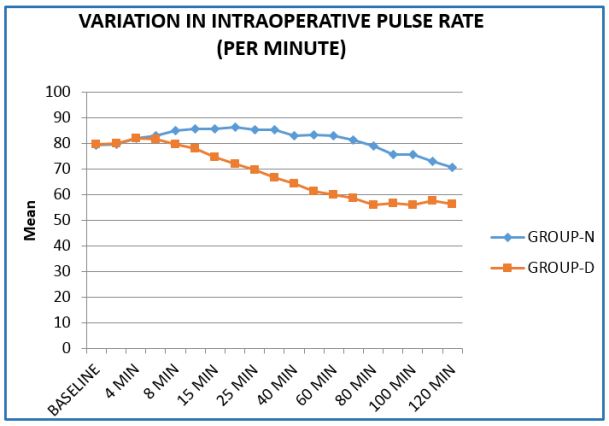
Table 5 shows intraoperative complications in Group N and Group D. Hypotension was found in two patients of Group N and in 8 patients of Group D. The difference between intraoperative complications when compared statistically was found to be nonsignificant for hypotension (p-value: 0.178).



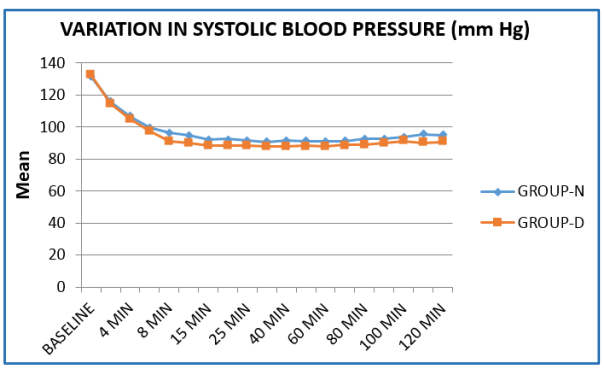
Graph 1



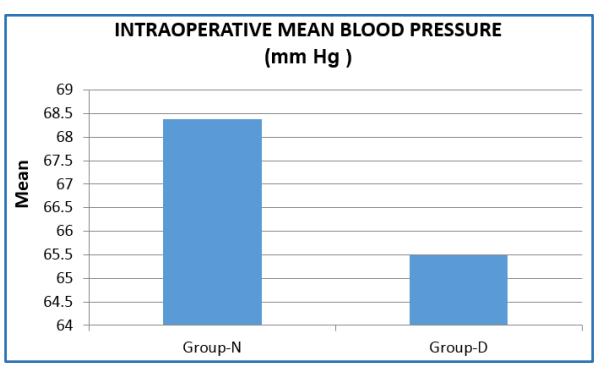
Graph 2



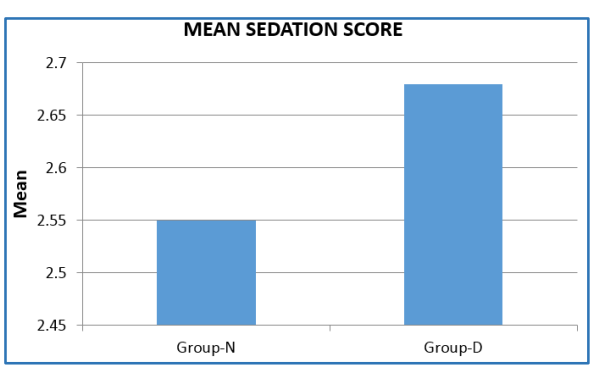
Graph 3



Graph 4



Graph 5



Graph 6

DISCUSSION

A revolution has occurred in the management of postoperative pain since the understanding of its neurobiology and pharmacology of the available drugs for the control of pain.[5] Various drugs have been used as adjuvant along with local anaesthetics in the subarachnoid space or intravenously with the aim of improving the duration of postoperative analgesia.[6] Because of its rapid onset, less failure rate, technically easy administration and economical than general anaesthesia, the spinal anaesthesia is most commonly used technique in developing country like India.[7] Local anaesthetics are commonly used for intrathecal anaesthesia, but the major problem is the relatively short duration of action, thus early analgesic intervention is needed in the postoperative period. A number of adjuvant, such as clonidine, dexmedetomidine, midazolam and others have been studied to prolong the effect of spinal anaesthesia.[8,9]

Harsoor SS et al[3] in May-June 2013 studied a total of 50 patients undergoing infraumbilical and lower limb surgeries under subarachnoid block and classified in Group D received I.V. dexmedetomidine 0.5 mcg/kg/hr. bolus over 10 mins. prior to subarachnoid block followed by infusion of 0.5 mcg/kg/hr. for the duration of surgery and Group C received similar volume of normal saline.

They found that time of onset of sensory blockade and motor blockade was significantly decreased in Group D. The time for 2 segment regression was significantly decreased in Group D. Hence, they concluded that administration of I.V. dexmedetomidine during subarachnoid block hastens the onset of sensory blockade and prolongs duration of sensory and motor blockade with satisfactory arousable sedation.

With this background, the present study was carried out at tertiary care hospital in the Department of Anaesthesia to evaluate the influence of intravenous dexmedetomidine on the characteristic of intrathecal Inj. Bupivacaine hyperbaric 0.5% in the patients undergoing lower umbilical surgeries or lower limb surgeries.

Time to Reach L1 (Secs.)

In present study, Table 2 shows that in Group N, the mean time to reach sensory level to L1 was 99.0±8.84 secs., whereas in Group D the mean time to reach sensory level to L1 was 98.46±8.34 secs., the difference was statistically not significant (P-value = 0.8110, NS).

Harsoor SS et al[3] (2013) in their study found that time of onset of sensory blockade in Group D was 66±44.14 seconds compared to Group C 129.6±102.4 seconds. The authors observed that there was early onset of sensory block in the group receiving bolus dexmedetomidine compared to the group receiving normal saline.

Time for Maximum Sensory Level (mins.)

In present study in Table 2 shows mean time for maximum sensory level achieved in Group N was 6.7±0.95 mins. (5 mins.-8 mins.) while in Group D mean time was 6.5±1.07 mins. (5 mins.-8 mins.). Both the group were comparable statistically (P-value = 0.4486 NS).

Chilkunda N Dinesh, NA Sai Tej et al[10] in 2014 evaluated the effect of intravenous dexmedetomidine on spinal anaesthesia with 0.5% of hyperbaric bupivacaine in 100 patients divided into two groups, 50 patients in each, Group

C and Group D. The mean time for maximum sensory level in this study was 11.6±1.9 mins. in Group D and in Group C it was 11.9±2.1 mins. Both the groups were compared statistically and the difference was found to be nonsignificant (p-value: 0.41).

Time of 2 Segment Regression (Mins.)

In present study, Table 2 shows the mean time of 2 segment regression in Group N was 128.5±10.59 mins. (100 mins.-140 mins.), while in Group D the mean time was 149.66±10.33 mins. (130 mins.-170 mins.). Time of 2 segment regression was compared between both the groups and the difference was found to be statistically highly significant (P-value: <0.0001), i.e. time of two segment regression was significantly earlier in Group D. The result of our study is similar to study done by Mi Hyeon Lee, Jae Houn Ko et al,[11]

Duration of Sensory Blockade

In present study, Table 2 shows the mean duration of sensory blockade in Group N was 141.43±10.64 mins. (120 mins.- 158 mins.) while in Group D mean duration was 164.33±10.72 mins. (150 mins.-190 mins.). Duration of sensory blockade was compared, difference was found to be statistically highly significant. (P-value: <0.0001). Al-Mustafa MM et al[12] in 2009 evaluated 48 patients, which were randomly allocated into two equal groups following receiving spinal isobaric bupivacaine 12.5 mg. Patients in Group D received intravenously a loading dose of 1 µg/kg dexmedetomidine over 10 mins. and a maintenance dose of 0.5 µg/kg/hr. Patients in group C (the control group) received normal saline. They found that the duration of sensory block was longer in intravenous dexmedetomidine group compared with control group (261.5+/-34.8 mins. versus 165.2+/-31.5 mins., P<0.05).

Onset of Motor Blockade (Mins.)

In Table 3, present study shows the mean time to achieve motor Bromage scale 2 in Group N was 6.1±1.51 mins. (3 mins.-8 mins.), while in Group D, mean time was 6.2±1.54 mins. (5 mins.-6 mins.). Both the groups were comparable statistically (P-value: 0.8009, NS).

Duration of Motor Blockade

In present study, Table 3 shows the mean duration of motor blockade in Group N was 161.16±8.27 mins. (140 mins. - 180 mins.), while in Group D, mean duration of motor blockade was 190.67±13.37 mins. (160 mins.-220 mins.) and the difference was found to be highly significant (P-value: <0.0001) The result of our study is similar to study done by Chilkunda N Dinesh, NA Sai Tej et al.[10]

Duration of Analgesia

In present study, Table 4 shows the mean duration of analgesia in Group N was 183.60 mins.±9.99 mins. (160 mins.-200 mins.), while in group D, the duration was 238 mins.±12.28 mins. (220 mins.-260 mins.). Rescue analgesic drug such as NSAID (Inj. Diclofenac) was given IM when the patient complained pain (VAS ≥3). If patient complained of pain even after 30 mins. of Inj. Diclofenac, Inj. Tramadol infusion was started. It was found that requirement of analgesic drug in Group N was early in postoperative period while duration of requirement of analgesic drug was prolonged in Group D.

The difference was found to be highly significant. (P-value: <0.0001). The result of our study is found similar to the study done by Reddy VS, Shaik NA et al[13] in July 2013 compared and evaluated the efficacy of intravenous dexmedetomidine premedication with clonidine and placebo on spinal blockade. They found that dexmedetomidine increased the time (243.35±56.82 mins.) to first postoperative analgesic request compared with clonidine (190.93±42.38 mins., P<0.0001) and placebo (140.75±28.52 mins, P<0.0001).

Intraoperative Vitals

Haemodynamic Parameters during Bolus of I.V. Dexmedetomidine

Graph 1 and Graph 2 shows haemodynamic parameters (mean pulse rate, systolic blood pressure and mean blood pressure) during bolus of I.V. dexmedetomidine in Group N and Group D respectively and the difference was found to be nonsignificant. When the literature was searched, comparison of haemodynamic parameters during bolus was not done in previous studies.

Haemodynamic Parameters after Spinal Anaesthesia

In the present study, Graph 3 shows variation in mean pulse rate. In Group N, the mean pulse rate increased for first 20 mins. after which there was a gradual decrease in mean pulse rate till 120 mins., while in group D, the mean pulse rate increased for first 4 mins. after which there was a gradual decrease in the mean pulse rate till 120 mins. Though, there is decrease in pulse rate, the fall of pulse rate during infusion was nonsignificant and there is no incidence of bradycardia in both the group and hence no requirement of I.V. Atropine.

Graph 4 shows variation in systolic blood pressure in Group N. The systolic blood pressure decreased gradually from baseline till 30 mins. After 30 mins., there was gradual increase in systolic blood pressure till 120 mins., while in Group D, the systolic blood pressure decreased gradually from baseline till 120 mins. Graph 5 shows variation in the mean blood pressure in Group N and Group D. There was gradual decrease in mean blood pressure in both the groups. Though, there is change in systolic and mean blood pressure in both the groups, but the change was nonsignificant and there were only 2 incidence of hypotension in Group N and 8 incidence in Group D and hypotension can be corrected by bolus dose of Inj. Mephentermine, none required infusion of Inj. Dopamine. Al-Mustafa MM et al[12] in 2009 evaluated 48 patients, which were randomly allocated into two equal groups following receiving spinal isobaric bupivacaine 12.5 mg. Patients in group D received intravenously a loading dose of 1 mcg/kg dexmedetomidine over 10 mins. and a maintenance dose of 0.5 mcg/kg/hr.

Patients in group C (the control group) received normal saline. They found that in Group D the patients have good haemodynamic stability as compared to Group C.

Intraoperative Sedation Score

Intraoperative sedation score was monitored by Ramsay Sedation Score. The mean sedation score in Group N was 2.55±0.15, while in Group D, mean sedation score was 2.68±0.15. When the mean sedation score was compared in two groups, the difference was found to be statistically highly significant (P-value: 0.0022). Kaya FN et al[14] in January 2010 studied total 75 patients undergoing TURP and compared intravenous dexmedetomidine with midazolam and placebo on spinal block duration, analgesia and sedation. They found that maximum Ramsay sedation score was greater in the dexmedetomidine and midazolam groups than in the saline group (P<0.001).

Intraoperative Complications

In present study, Table 5 shows that incidence of hypotension was found in 2 patients of Group N and in 8 patients of Group D. Hypotension was corrected by bolus dose of Inj. Mephentermine and none of them required dopamine infusion. There was no incidence of bradycardia, nausea and vomiting, pruritus, respiratory depression in both the groups. The difference between intraoperative complications when compared statistically was found to be nonsignificant for hypotension (p-value: 0.178).

Seung Hwan et al[2] in August 2011 studied 60 patients classified as ASA I and II and found that incidence of haemodynamic instability like hypotension and bradycardia were no different among the groups and hence they concluded that single dose I.V. dexmedetomidine 0.25-0.5 mcg/kg administered after spinal anaesthesia improved the duration of spinal anaesthesia without significant side effect.

CONCLUSION

In view of above observations, our study concluded that I.V. supplementation of bolus followed by continuous infusion of Inj. Dexmedetomidine prolong the duration of sensory and motor block induced with spinal bupivacaine 0.5% hyperbaric. It provides the stable haemodynamic condition with satisfactory anaesthetic condition with significant decrease in the requirement of intraoperative supplementation of sedative and analgesic drugs. It prolongs the duration of analgesia and decreases early requirement of analgesic drugs and does not increase side effects like hypotension, bradycardia, nausea and vomiting, shivering, pruritus. It also provides satisfactory arousable sedation without causing respiratory depression. So, it is concluded that I.V. bolus plus continuous infusion of Inj. Dexmedetomidine is better alternative to I.V. bolus dexmedetomidine for prolonging sensory block, motor block and duration of analgesia induced with intrathecal hyperbaric bupivacaine.

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