PERI-ANAL SURGERY UNDER SADDLE BLOCK ANAESTHESIA COMPARING THREE DIFFERENT DOSES OF HYPERBARIC 0.75% BUPIVACAINE

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ABSTRACT

Objective: To compare three doses of hyperbaric 0.75% bupivacaine and measuring time for home readiness after day care perianal surgery under saddle block anaesthesia.

Study Design: Non randomized controlled trial.

Place and Duration of Study: The study was conducted at the department of Anaesthesia, CMH Rawalpindi from Jun 2014 to Apr 2015.

Material and Methods: In this study 90 patients who presented for perianal day care surgery, were divided in three equal groups. Group A received 7.5 mg, group B 6.0 mg and group C 4.5 mg of hyperbaric 0.75% bupivacaine. Intrathecal injection was given in L4-5 space by 25 G spinal needle in sitting position. Lithotomy position was made after five minutes. After surgery patients were monitored in recovery room. After fulfilling ambulatory and discharge criteria patients were allowed to go home with attendants. Time of intrathecal injection, assessment of above criteria and time of discharge were noted and analyzed.

Results: Male patients were 85.6% and females were 14.4%. Mean time of surgery was 48 ± 10.59 min. Mean time of discharge in minutes for group A was 235.86 ± 49.38, for group B 217.7 ± 42.49 and for group C 205.76 ± 32. Time of discharge was significantly different between group A and group C (p=0.02). While it was not significantly different between group A and group B (p=0.29) and between group B and group C (p=0.819).

Conclusion: Lower dose of hyperbaric bupivacaine can reduce the time for home readiness compared to higher dose. Time of discharge is mainly dependent on time to micturate after saddle block anaesthesia.

Keywords: Day care surgery, Home readiness, Hyperbaric bupivacaine, Saddle block.

INTRODUCTION

Day care surgery is getting popular because of short stay at hospital, high patient satisfaction, less expenses and reduced burden on hospital resources. Peri-anal surgeries are commonly performed on day care basis under saddle block anaesthesia. To reduce hospital stay, anesthetic medications should be kept at minimum possible level which permit early mobilization without pain and residual complications of anaesthesia. Studies show that short peri-anal surgeries can be performed successfully at doses as low as 3mg of hyperbaric bupivacaine[1]. In a study 1.5 mg was considered sufficient when it was directed to targeted nerve roots[2]. However some others did not find this dose sufficient for surgical anaesthesia[3].

Low intrathecal dose causes confined blockade, less hemodynamic instability, less chances of post op shivering and urinary retention. As a result patients stay for less time in recovery room and can be discharged without fear of complications.

Studies are available which compared different doses of hyperbaric bupivacaine for level and duration of sensory block but very few studies are available internationally which estimated time of home readiness after intrathecal bupivacaine[4]. In a study, Gudaityte et al found quick recovery and early mobility with low dose hyperbaric bupivacaine[4]. To our knowledge, no study is conducted in our country which compared different doses of hyperbaric bupivacaine for time of stay at hospital after day care surgery.

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The rationale of this study was to find out the dose of hyperbaric 0.75% bupivacaine which provides effective anaesthesia for perianal surgery and results in minimum time of stay at hospital for day care surgery.

MATERIAL AND METHODS

Approval from the ethical committee of Combined Military Hospital (CMH) Rawalpindi was taken. Patients of both genders, ages between 20 to 50 years and American Society of Anasesthesiologists (ASA) physical status I and II undergoing elective perianal surgery on day care basis were included in study. Most of these patients were from Rawalpindi and nearby areas. They were accompanied by attendants and had transport facility. Patients having cardiopulmonary disease, Basal Metabolic Index (BMI) more than 35, bleeding disorder, allergy to amide type local anaesthetics and any contraindication to spinal anaesthesia were excluded from the study.

Non probability consecutive sampling technique was used to recruit patients. After written informed consent 90 patients were selected for study. They were divided into three groups by using codes placed in sealed and sequentially numbered envelops. They were divided into 3 groups by randomized allocation to groups A, B and C. Group A comprised of those patients who received 7.5 mg bupivacaine (1.0 ml), group B received 6.0 mg bupivacaine (0.8 ml) and group C received 4.5 mg bupivacaine (0.6 ml).

All the patients were preloaded with 10ml/kg of inj Ringer's lactate I/V before employing anaesthesia. Hyperbaric 0.75% Bupivacaine used was Abocaine Spinal of Abbot Laboratories Pakistan®. After local anaesthesia, injection was given intrathecally at L4-L5 interspace using 25 G Quincke needle (B.D® Quincke spinal needle). Direction of spread was cauded. Sitting position was maintained for 5 minutes after which lithotomy position made[5]. Sedation with 1 mg midazolam was given to all three groups. Sensory level of blockade was assessed by icepack and painful stimulus from non tooth forceps. Rescue dose of 0.25 mg/kg

Table-I: Demographic data and type of surgery.

Mean age (Years)	**35.52 ± 8.1**	
Gender	Male	85.6%
	Female	14.4%
Surgery	Haemorrhoids	40%
	Peri anal fistula	33.3%
	Anal fissure	10%
	Perianal abcess	6.7%
	Pilonidal sinus	10%

Table-II: Post hoc analysis (Bonferroni test) for time of stay at hospital after intrathecal injection.

(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.
	B	18.16667	10.82091	.290
B	C	11.93333	10.82091	.819
A	C	30.10000	10.82091	.020

The mean difference is significant at the level of 0.05.

ketamine was used when blockade was not fully effective during surgery[6].

After surgery patients were kept in recovery area and monitored for vitals and any complication of anaesthesia or surgery. Patients were assessed for ambulation and discharge criteria. Criteria for ambulation included return of sensation in the perianal area (S4-5), plantar flexion of the foot at preoperative levels of strength and return of proprioception in the big toe. And criteria for discharge included stability of vitals for 30 min, patient alert and oriented, no dizziness or nausea or vomiting, patient voided urine and pain acceptable to him[7]. Patients fulfilling these criteria were discharged and instructions regarding medications and symptoms of complications were given to patient and his/her attendant. Patients and their attendants were instructed to contact hospital in case of any complication e.g. headache, vomiting, dizziness and numbness. Along with other information, time from start of anaesthesia to discharge from hospital was noted on proforma. Any bias was controlled by appropriate data collection and standardization of measuring technique.

Collected data were analyzed by SPSS version 16.0. Results were expressed as numbers, percentages, means and standard deviation. ANOVA was used for comparison among three groups. A *p*-value of 0.05 or less was considered significant.

RESULTS

Total patients included in the study were 90. Mean age of study sample was 35.52 ± 8.10 years. There were 77 male patients and 13 females. Fistulectomy was done in 33.3% of patients, haemorrhoidectomy in 40%, fissurectomy in 10%, perianal abcess in 6.7% and pilonidal sinus in 10% of patients (table-I). Mean time of surgery was 48 ± 10.59 min. Eighty six patients did not require any additional analgesia. Only 4 patients felt discomfort and were given ketamine in addition to saddle block during surgery. Three patients were from group C and one from group B.

All patients remained alert and oriented, vitally stable and achieved ambulation. No patient developed nausea or vomiting. Average time of stay in hospital after intrathecal injections was 219.7 minutes. For group A it was 235.8 minutes, for group B 217.7 minutes and for group C 205.7 minutes as shown in figure. This figure also shows standard deviation, maximum and minimum time of stay at hospital for each group. Eleven patients did not pass urine and required foley catheter to empty bladder. Five patients were from group A, 4 from group B and 2 from group C. Average time to pass the urine in rest of patients was 192.3 minutes.

The groups were compared for time of stay at hospital by analyzing with Post hoc one way ANOVA test (table-II). It revealed that time of discharge to home was significantly different

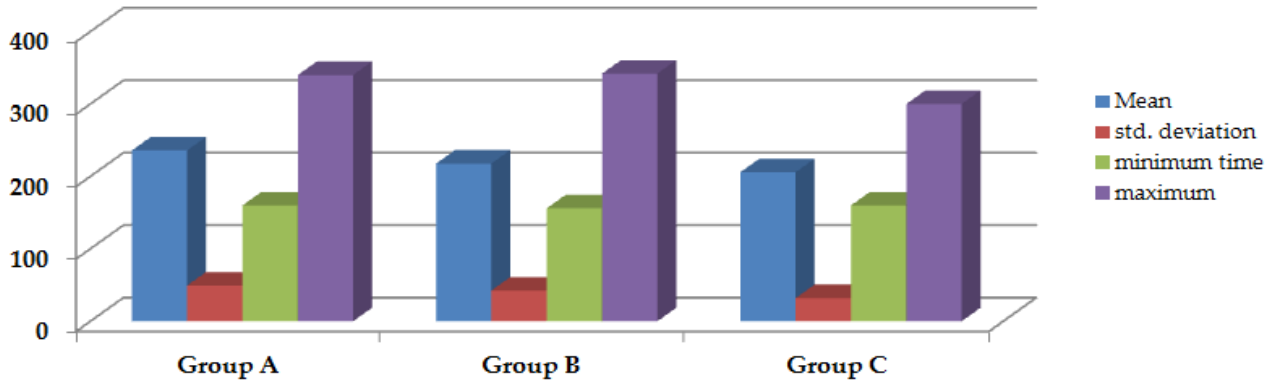

Figure: Time (in minutes) of stay at hospital after intrathecal injection.

between group A and group C (p=0.02). While it was not significantly different between group A and group B (p=0.29) and between group B and group C (p=0.819). All the patients had pain acceptable at the time of discharge, including those who required ketamine during surgery.

DISCUSSION

This study was performed to compare different doses of hyperbaric bupivacaine which provides adequate anaesthesia and reduces the time of stay at hospital. Very low doses may be associated with poor anaesthesia and discomfort during surgery. On the other hand, high doses of bupivacaine are associated with dense motor block, prolonged recovery and urinary retention and can reduce patient satisfaction[8].

In our study, all doses of hyperbaric bupivacaine provided adequate analgesia for perianal surgery. Only three patients in 4.5 mg group and one patient in 6 mg group required ketamine (0.25mg/kg) for discomfort during surgery. After intravenous ketamine these patients were able to tolerate surgery. Similarly in another study after saddle block anaesthesia with 5 mg hyperbaric bupivacaine, 7 out of 216 patients felt discomfort during surgery[9].

Mobility after surgery was different among these groups. Patients in 4.5 mg group (group C) had early and better mobility. Patients in this group were able to move their feet and had good proprioception just after surgery. These patients were able to move on to shifting trolley by themselves and were able to ambulate early in recovery room. And few were able to ambulate without support.

All three groups remained hemo-dynamically stable during surgery and afterwards in recovery room. There were no episodes of post operative nausea and vomiting among these patients. On discharge pain was acceptable to patients. No patient required additional analgesia during stay in recovery room. Even those patients who required ketamine during surgery did not require additional analgesia.

Time of discharge was significantly different between group A and C. But in other inter-group comparisons, time of discharge was not significantly different. Patients were able to ambulate early but main factor affecting the time of discharge was time to void urine which was not much different among these groups. Neuraxial anaesthesia inhibits detrusor function and micturation reflex which recovers after recovery of motor function. Patients do not appreciate fullness of bladder and time to void urine is delayed. A study with hyperbaric 0.5% bupivacaine 1 ml and 2 ml showed early mobility in low dose group but similar time to void urine in two groups[10]. According to a study, high dose of bupivacaine when given in sitting position caused intense sacral nerve block which leads to delayed recovery of functions of the urinary bladder[11].

In our study average time to micturate was 192 mins, while minimum time was 142 mins and maximum time was 300 mins. In a review article, after intrathecal anaesthesia with bupivacaine, longest time to micturate was mentioned as 462 min[12]. After peri-anal surgery under spinal anaesthesia, Postoperative urinary retention has been described with wide ranges between 7.9% and 20.3%[13,14]. In our study urinary retention occurred in 12.2% of patients.

CONCLUSION

Lower dose of hyperbaric bupivacaine can reduce the time for home readiness compared to higher dose. Time of discharge is mainly dependent on time to micturate after saddle block anaesthesia.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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