Original Research Article

Comparative study of intrathecal (1%) 2-Chloroprocaine Vs intrathecal (0.5%) Sensorcaine for day care surgeries

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Abstract

Background: Day-care surgery, it is the patient being discharged from the hospital on the same day of surgical procedure, has become immensely popular modality of treatment throughout the globe. **Aims and Objectives:** To compare the efficacy of intrathecal (1%) 2-Chloroprocaine and intrathecal (0.5%) sensorcaine for day care infraumbilical surgeries. **Methodology:** This was a prospective, randomized study carried out in the patients undergoing the various infraumbilical day care surgeries under spinal anaesthesia at tertiary health care centre. After the ethical permission, the written informed consent was obtained from 70 patients and was enrolled in the study. Out of 70 patients, 35 patients were enrolled to Group A i.e. Chloroprocaine Group and 35 patient in Group B i.e. Sensorcaine Group The patients were randomly allocated in to the groups by computer generated random numbers. . The subarachonoid block was given to the patients in Group A with (1%) 50 mg chlorprocaine and in Group B with(0.5%) 15 mg sensorcaine. The data was then analyzed by unpaired t-test and chi-square test by SPSS 19 version software. **Results:** The mean age in both the groups were comparable i.e. 34 ± 4.65 35± 3.97 (t=0.76,df=48,P>0.05) and the Male to Female ratio was also comparable i.e. 2.5 :1 and 1.67:1 (X^2=0.35,df=1,p>0.05). Time for onset of Sensory block(min) was comparable in both the groups was 2.45 ± 1.03 and 2.29 ± 0.93 (P>0.05,t=0.72,df=68); Time for onset of Motor block (min) was comparable i.e. 3.1± 0.34 and 2.84 ± 1.04 (P >0.05,t=0.92,df=68); Total duration of sensory block (min) was significantly higher in group B (167 ±43.87) than Group A (105.62±30.56), (P<0.05,t=4.92,df=68); Total duration of motor block (min) was significantly greater in Group B(135±54.32) than Group A (95.73± 30.76), (P<0.05,t=1.02,df=68). **Conclusion:** It can be concluded from this study that sensorcaine was superior to chloroprocaine with respect to sensory motor blockade otherwise it was comparable in all the other characteristics of anaesthesia.

Key Words: Chloroprocaine, sensorcaine, Day care surgery, infraumbilical

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INTRODUCTION

Day-care surgery, that is, the patient being discharged from the hospital on the same day of surgical procedure, has become immensely popular modality of treatment throughout the globe. The forthcoming era will definitely see a much larger number of patients and physicians opting for this surgical trend. The fast pace of life, adoption of nuclear family structure, need of early return to work, and resumption of daily routine chores to maintain social and professional competitiveness, are few of the important factors which have propelled this treatment modality to newer heights.[1,2] Moreover, the relative shortage of beds in the hospital and scarce economic resources due to ever increasing patient population has boosted the concept of small incisions and minimal invasive surgeries, thus allowing for more surgical procedures to be performed on day-care basis.[1,2,3] Anaesthesia for day-care surgeries may require administration of general, regional, and local anaesthesia or monitored anaesthesia care, supplemented with sedation. The advancements in anaesthesia techniques and availability of newer drugs have been contributed largely to the progress of day-care surgery [4]. However the provision of day-care anaesthesia services is a challenging task. The main challenges include the logistics and organization of the day-care setup to make it

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function efficiently, effectively, and safely.[5,6,7] The ideal local anaesthetic used for day care surgery must allow quick installation of spinal block, a duration of sensory block adapted to surgery with minimal of side effects. The new drugs like chloroprocaine and sensorcaine are very promising for day care surgeries, hence we have studied the effectiveness of chloroprocaine versus sensorcaine for day care surgeries at tertiary health care centre. We hypothesized that the use of (1%) 2-chloroprocaine would be associated with faster recovery from sensory- motor blockade than sensorcaine.

METHODOLOGY

This was a prospective randomized study carried out in ASA I and II patients undergoing the various infra umbilical surgeries under spinal anaesthesia at tertiary health care centre during the one year period i.e. April 2018 to April 2019 by taking the written and explained consent of 70 patients and was enrolled in the study. Out of 70 patients, 35 patients were enrolled to Group A i.e Chloroprocaine Group and 35 patients in Group B Sensorcaine Group. . The subarachonoid block was given to the patients in Group A with (1%) 50 mg chlorprocaine and in Group B with (0.5%) 15 mg sensorcaine. Randomization of the patients in to the two groups was done by computer generated random numbers. On the day of surgery NBM status and consent was checked. All details of the patients like age, sex, height, BMI, preoperative vitals were noted. During procedure and post operatively patients of both the groups were monitored for HR, ECG, NIBP, SPO_2. In the intraoperative period the onset, efficacy, duration and regression of sensory and motor block were noted in both the groups at regular intervals. If any complication occurred at the time of procedure was treated and then noted. Postoperatively, the groups were compared for recovery profile, duration of analgesia, analgesic requirement and complication. Inj Dyanapar 75 mg used as rescue analgesia when VAS >4. The data was analysed by unpaired t-test and chi-square test and calculated by SPSS 19 version software.

RESULT

Table 1: Distribution of the patients as per the age and sex

	Group A (n=35)	Group B (n=35)	p-value
Age (Yrs.) (Mean ±SD)	34 ± 4.65	35± 3.97	t=0.72,df=68,P>0.05
Sex			
Male	25	16	X^2=0.54,df=1,p>0.05
Female	10	9	

In our study we have seen that the mean age in both the groups was comparable i.e. (34 ± 4.65 and 35± 3.97), (t=0.76,df=48,P>0.05) and the Male to Female ratio was also comparable i.e. 2.5 :1 and 1.67:1 (X^2=0.35,df=1,p>0.05).

Table 2: Distribution of the patients as per the various parameters

Various parameters	Group A (n=35)	Group B (n=35)	p-value
Time for onset of Sensory block(min)	2.45 ± 1.03	2.29 ± 0.93	P>0.05,t=0.72,df=68
Time for onset of Motor block (min)	3.1± 0.34	2.84 ± 1.04	P>0.05,t=0.92,df=68
Total duration of sensory block (min)	105.62±30.56	167 ±43.87	P<0.05,t=6.92,df=68
Total duration of motor block (min)	95.73± 30.76	133±54.32	P<0.05,t=4.02,df=68
First analgesic requirement (min)	115.84±52.24	175± 32.61	P<0.05,t=7.02,df=68
Ambulation time (min)	134.5.84±22.21	225± 32.61	P<0.05,t=5.03,df=68

Time for onset of Sensory block(min) was (2.45 ± 1.03) in group A and (2.29 ± 0.93) in group B. Time for onset of Motor block (min) was (3.1± 0.34) in group A and (2.84 ± 1.04) in group B; Total duration of sensory block (min) was significantly higher in group B (167 ±43.87) than in Group A (105.62±30.56); Total duration of motor block (min) was significantly higher in group B (133±54.32) than group A (95.73± 30.76). First analgesic requirement in group A was (115.84±52.24) min and in Group B was (175± 32.61 min.

DISCUSSION

The primary goal of ambulatory anaesthesia is rapid recovery with minimal side effect. For many years, spinal lidocaine has been the local anaesthetic of choice for outpatient surgery because of its profile of fast onset and short duration. However, transient neurological symptoms (TNS) described as back pain with irradiation to the lower extremities have been reported [10-14]. An amino-ester local anaesthetic, 2-chloroprocaine (2-CP) is of short duration of action. Chloroprocaine pharmacological profile is very similar to that of lidocaine, characterised by short latency and short duration. Hence it is useful for day care surgeries. Clinical studies in volunteers demonstrated that its use at doses ranging between 30 and 60 mg provides a spinal block profile similar to that of lidocaine, with a lower incidence of TNSs [8, 9]. Clinical research with spinal 2-CP has been limited mainly to dose comparison and evaluation of block characteristics in patients undergoing short procedures. Alternative, attempts have been made to adapt hyperbaric

bupivacaine, a long-acting local anaesthetic, to the ambulatory setting by using smaller doses. However, the duration of the block remains prolonged with these smaller doses, and they may provide insufficient level of anaesthesia [8, 9]. Furthermore, urinary retention (or a prolonged interval to first voiding) is frequently encountered with bupivacaine, which delays the time until discharge for ambulatory patients [10]. Sensorcaine is a form of bupivacaine with some good anaesthetic characteristics hence we have the compared these two drugs. The onset of sensory blok depends upon volume, dose, concentration and baricity of the drug. In present study, the mean onset of sensory block at L1 was (2.45 ± 1.03) in group A and (2.29 ± 0.93)min in group B (P>0.05,t=0.72,df=68);Time for onset of Motor block (min) was (3.1 ± 0.34) in group A and (2.84 ± 1.04) in group B (P >0.05,t=0.92,df=68); Total duration of sensory block (min) was significantly higher in group B (167±43.87) than in Group A (105.62±30.56) (P<0.05,t=6.92,df=68); Total duration of motor block (min) was significantly greater in Group B (133± 54.32) than group A (95.73± 30.76) (P<0.05,t=4.02,df=68). The time for first rescue analgesia was prolonged in Group B (175± 32.61) mins than in group A (115.84±52.24) mins. Thus onset of sensory and motor blockade was comparable in both group but duration of motor block, sensory block, total duration of analgesia and ambulation is prolong in group B. These findings are similar to C. Camponovo[15] *et al*, Jessica et al[16] they found that the anaesthetic properties of both the groups were similar except the anaesthetic recovery in chloroprocaine was fast. Similar finding observed in Lacasse et al[17] and Yoos JR, et al[18]. they observed that all offset variables showed a faster recovery of sensory motor block in chlorprocaine group than sensorocaine. In present study none of the patients in either group had developed any complication.

CONCLUSION

It can be concluded from this study that (1%) 2-Chloroprocaine has the shortest time to complete recovery of sensory and motor block otherwise it was comparable and same in all the other characteristics of anaesthesia with 0.5% sensorcaine.

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