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Role and Effectiveness of Intraperitoneal Bupivacaine in Post-Operative Pain Management after Laparoscopic Cholecystectomy

Lal Shehbaz, Bashir Ahmed, Kamlaish, Saqib Basar, Ahmed Ali

ABSTRACT

To study the effectiveness of intraperitoneal bupivacaine in the pain management of patients who had laparoscopic cholecystectomy, and comparison with a control group. **Objectives:** The purpose of the study is to find out the efficacy of intraperitoneal bupivacaine injection, for post-operative pain management in patients following laparoscopic cholecystectomy. **Material & Methods:** The method of study is a randomized control trial, Two groups of people were selected at random from a pool of 100 patients, each group had 50 patients each. One group did not receive intraperitoneal bupivacaine, while the other group was injected 20ml of bupivacaine (.25%) intraperitoneally, in the sub diaphragmatic space on the right side along with in the bed of the gall bladder. **Results:** The post-operative mean abdominal pain score using the VAS scale in both groups was calculated using at different intervals and recorded as 1.34 +/-0.43 cm in the control group and 2.54 +/- 0.26 cm in the bupivacaine group at zero hours, , 2.11 +/- 0.32 cm in control group and 2.98 +/- 0.54 cm in bupivacaine group at two hours, 2.98 +/- 1.05 cm in control group and 3.24 +/- 0.84 cm in bupivacaine group at four hours while 3.13 +/- 1.21 cm in control group and 4.59 +/- 1.32 cm in bupivacaine group at six hours were recorded. The efficacy is recorded as 36.67% in control group and 6.67% in bupivacaine group while 63.33% in control group and 93.33% in bupivacaine group. **Conclusion:** For post-operative pain relief in laparoscopic cholecystectomy patients, intra peritoneal bupivacaine injection is an effective method. **Key words:** intra peritoneal bupivacaine, laparoscopic cholecystectomy, post-operative pain management.

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INTRODUCTION

Among the common elective surgeries done, laparoscopic cholecystectomy is one of the most common.[1] There are a multitude of benefits of laparoscopic cholecystectomy when compared to open cholecystectomy, such as decrease in post-operative pain, less analgesic consumption, and a rapid return to daily activities. Among these post-operative pain is the most common complaint, and it is marked in the early post-operative period.[2-6] Postop pain relief is of practical importance[10] Many methods of pain relief have been tried for this purpose.[7] But intra-peritoneal bupivacaine is the most widely used pain relief method on account of its high potency and long duration.[8,9] Laparoscopic procedures have taken over and now have become the gold standard in treatment of symptomatic cholelithiasis and are also done for acute cholecystitis.[11,12]

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MATERIALS & METHODS

100 patients were selected, and were divided into two groups, by using a random number generator. Patients information was noted and informed consent was taken, pre op assessment was done. Visual analogue scale was used in this study, and its use was explained to the patients. In operation theatre standard II monitoring was used. The protocol followed with patients was nalbuphine 6mg, and metochlopromide 10mg IV administered before induction of anesthesia. Propofol and suxamethonium was used. Intubation with endotracheal tube, maintained by using oxygen nitrous oxide and isoflurane, muscle relaxation by Atracurium. All the incision sites were infiltrated with 5ml of 0.5% bupivacaine, 2 minutes before incision was given. CO2 insuffulation was used to create pneumoperitoneum, and pressure was maintained between 12-14mm of Hg, in the study group 20ml of .25% bupivacaine was instilled in right sub diaphragmatic space and at the gall bladder bed.

RESULTS

Non probability purposive sampling technique was used for the calculated sample size of 100, 50 patients in each group of test subjects. 80% power of test was used to calculate the results, level of significance taken is 5%, and taking the percentage efficacy to be 8.6% in control group and 29.4% in bupivacaine group in post-operative period after laparoscopic cholecystectomy. The ratio of male to female in control group was 70% female 30% male and in bupivacaine group is 65% female 35% male. The post-operative mean abdominal pain score using the VAS scale in both groups was calculated using at different intervals and recorded as 1.34 +/-0.43 cm in the control group and 2.54 +/- 0.26 cm in the bupivacaine group at zero hours, , 2.11 +/- 0.32 cm in control group and 2.98 +/- 0.54 cm in bupivacaine group at two hours, 2.98 +/- 1.05 cm in control group and 3.24 +/- 0.84 cm in bupivacaine group at four hours while 3.13 +/- 1.21 cm in control group and 4.59 +/- 1.32 cm in bupivacaine group at six hours were recorded. The efficacy is recorded as 36.67% in control group and 6.67% in bupivacaine group while 63.33% in control group and 93.33% in bupivacaine group.

Table 1: Distribution of age of Patients (n=100)

Age (in years)	Control group	Bupivacaine
20-30	7(14%)	8(16%)
31-40	16(32%)	15(30%)
41-50	20(40%)	21(42%)
51-60	7(14%)	6(12%)
Mean	46	50

Table 2: Distribution of gender of patients (n=100)

Gender	Control group	Bupivacaine
Male	15(30%)	32(65%)
Female	35 (70%)	18(35%)

Table 3: Post-operative mean abdominal pain score in both groups on different intervals (n=100)

Postop time	Control group	Bupivacaine
0 hrs	1.34±0.43 (cm)	2.54±0.26(cm)
2 hrs	2.11±0.32(cm)	2.98±0.54(cm)
4 hrs	2.98±1.05(cm)	3.24±0.84(cm)
6 hrs	3.13±1.21(cm)	4.59±1.32(cm)

Table 4: Comparison of efficacy in both groups (n = 100)

Efficacy	Control group	Bupivacaine
Yes	18(36.67%)	33(6.67%)
No	32(63.33%)	47(93.33%)

P value = 0.00 i.e. ≤ 0.05

DISCUSSION

Post-operative pain is the most important factor that limits recovery in laparoscopic cholecystectomy[13,14] Understanding the physiological basis of this pain is helpful in selecting appropriate pain relief method[15,16] According to a study 3 out of 13 patients showed

significant advantage of wound infiltration when a comparison is made of placebo and analgesic medications.[17] According to the study by Maharajan SK the efficacy of intraperitoneal bupivacaine injection was 29.4% as compared to 8.6% in control group in which no intraperitoneal bupivacaine was used. The findings of our study matches the same result.[6] Our results are consistent with other studies in which intra peritoneal administration of local anesthetic has shown to have a modest analgesic effect.[18,19]

CONCLUSION

For post-operative pain relief in laparoscopic cholecystectomy patients, intra peritoneal bupivacaine injection is an effective method.

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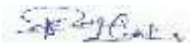
Dr. Kamlaish	3rd Author	
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