

Original Research

Assessment of the efficacy of Intraperitoneal Instillation of Levobupivacaine (0.25%) plus Dexmedetomidine for postoperative analgesia in patients undergoing laparoscopic cholecystectomy

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ABSTRACT:

Background: The present study was undertaken for assessing the efficacy of Intraperitoneal Instillation of Levobupivacaine (0.25%) plus Dexmedetomidine for postoperative analgesia in patients undergoing laparoscopic cholecystectomy. **Materials & methods:** A total of 40 patients were broadly divided into two study groups with 20 patients in each group as follows: Group A (Study group): Levobupivacaine plus Dexmedetomidine and Group B (Control group): Normal saline group. Laparoscopic procedures were carried out in all the patients under general anesthesia. Postoperatively the patients were assessed for pain utilizing visual analogue scale (VAS) at different time intervals. Rescue analgesics (Inj. Diclofenac) was given when VAS is more than 3. Statistical analysis was done. **Results:** While comparing the mean VAS at different time intervals in between group A and group B, significant results were obtained. Among the patients of group A, at baseline, 1 hour, 2 hours, 8 hours, 12 hours and 24 hours, number of patients requiring rescue analgesia was 0, 1, 3, 2, 0 and 0 respectively. Among the patients of group B, at baseline, 1 hour, 2 hours, 8 hours, 12 hours and 24 hours, number of patients requiring rescue analgesia was 0, 5, 7, 3, 3 and 1 respectively. While comparing the number of patients requiring rescue analgesia at different time intervals in between group A and group B, significant results were obtained. Mean time to rescue analgesia among the patients of group A and group B was 149.5 minutes and 51.8 minutes respectively. Significant results were obtained while comparing the mean time to first rescue analgesia among patients of both the study groups. **Conclusion:** Levobupivacaine can be utilized efficaciously for controlling postoperative analgesia in patients undergoing laparoscopic cholecystectomy.

Key words: Levobupivacaine, Laparoscopic cholecystectomy

Received: 15 October, 2021

Accepted: 18 November, 2021

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This article may be cited as: Garg SK. Assessment of the efficacy of Intraperitoneal Instillation of Levobupivacaine (0.25%) plus Dexmedetomidine for postoperative analgesia in patients undergoing laparoscopic cholecystectomy. J Adv Med Dent Res 2021;9(12):156-159.

INTRODUCTION

Cholelithiasis is the most frequent biliary pathology, with potentially high severity, especially by the presence of its complications. One of these is the acute cholecystitis, a frequent reason for an emergency presentation to the hospital. What should be mentioned in the case of patients older than 60 years is the higher frequency of associated pathologies that can influence the type and effectiveness of treatment. Laparoscopic cholecystectomy (LC) and intra-operative cholangiography is the most preferred modality of treatment currently. Appropriate timing of cholecystectomy in the patients with acute gallstone pancreatitis is still controversial. Beside this there is

also a great concern regarding compliance of patients for definitive surgery due to poverty, ignorance and illiteracy specially in developing countries.¹⁻⁴ Levobupivacaine has been found to be equally efficacious as bupivacaine, but with a superior pharmacokinetic profile. Clinically, levobupivacaine has been observed to be well-tolerated in regional anesthesia techniques both after bolus administration and continuous post-operative infusion. The incidence of adverse drug reactions (ADRs) is rare when it is administered correctly. Ropivacaine is a well-tolerated regional anaesthetic effective for surgical anaesthesia as well as the relief of postoperative and labour pain. The efficacy of ropivacaine is similar to

that of bupivacaine and levobupivacaine for peripheral nerve blocks and, although it may be slightly less potent than bupivacaine when administered epidurally or intrathecally, equi-effective doses have been established. Dexmedetomidine is found to be a vastly discriminating α -2 adrenoreceptor agonist that is confirmed to possess both analgesic and sedative properties.⁵⁻⁷ Hence; the present study was undertaken for assessing the efficacy of Intraperitoneal Instillation of Levobupivacaine (0.25%) plus Dexmedetomidine for postoperative analgesia in patients undergoing laparoscopic cholecystectomy.

MATERIALS & METHODS

The present study was conducted in department of anesthesia with the aim of assessing the efficacy of Intraperitoneal Instillation of Levobupivacaine (0.25%) plus Dexmedetomidine for postoperative analgesia in patients undergoing laparoscopic cholecystectomy. A total of 40 patients were broadly divided into two study groups with 20 patients in each group as follows: Group A (Study group): Levobupivacaine plus Dexmedetomidine and Group B (Control group): Normal saline group. Laparoscopic procedures were carried out in all the patients under general anesthesia. Postoperatively the patients were assessed for pain utilizing visual analogue scale (VAS) at different time intervals. Rescue analgesics (Inj. Diclofenac) was given when VAS is more than 3. Statistical analysis was done. Chi-square test and student t test was used for evaluation of level of significance.

RESULTS

In the present study, a total of 40 patients were analyzed and were broadly divided into two study groups; group A and the group B. 44.4 and 46.8 years was the mean age of the patients of the group A and group B. Majority of the patients of both the study groups were males. Among the patients of group A, mean VAS at baseline, 1 hour, 2 hours, 8 hours, 12 hours and 24 hours was 2.2, 2.1, 2.2, 1.4, 1.2 and 0.8 respectively. Among the patients of group B, mean VAS at baseline, 1 hour, 2 hours, 8 hours, 12 hours and 24 hours was 3.1, 2.7, 3.1, 2.5, 2.1 and 0.7 respectively. While comparing the mean VAS at different time intervals in between group A and group B, significant results were obtained. Among the patients of group A, at baseline, 1 hour, 2 hours, 8 hours, 12 hours and 24 hours, number of patients requiring rescue analgesia was 0, 1, 3, 2, 0 and 0 respectively. Among the patients of group B, at baseline, 1 hour, 2 hours, 8 hours, 12 hours and 24 hours, number of patients requiring rescue analgesia was 0, 5, 7, 3, 3 and 1 respectively. While comparing the number of patients requiring rescue analgesia at different time intervals in between group A and group B, significant results were obtained. Mean time to rescue analgesia among the patients of group A and group B was 149.5 minutes and 51.8 minutes respectively. Significant results were obtained while comparing the mean time to first rescue analgesia among patients of both the study groups.

Table 1: Mean VAS

Time (Hours)	Group A	Group B	P value
0	2.2	3.1	0.01(S)
1.0	2.1	2.7	0.01(S)
2.0	2.2	3.1	0.01(S)
8.0	1.4	2.5	0.03(S)
12.0	1.2	2.1	0.02(S)
24.0	0.8	0.7	0.11

S: Significant

Table 2: Number of patients requiring rescue analgesia

Time (hours)	Group A	Group B
0	0	0
1.0	1	5
2.0	3	7
8.0	2	3
12.0	0	3
24.0	0	1

Table 3: Mean time to first analgesic requirement

Parameter	Group A	Group B	p-value
Mean time (minutes)	149.5	51.8	0.001 (S)

S: Significant

DISCUSSION

Laparoscopic cholecystectomy was first introduced by Muhe in 1986, and has now evolved to the point where it has replaced the open technique in many medical centers around the world. Today, laparoscopic cholecystectomy, rather than the open technique, is considered as the treatment of choice for gallstone disease. Perceived advantages of laparoscopic cholecystectomy, compared with the open technique, include earlier return of bowel motility, less post-operative pain, better cosmetic result and shorter hospital stay resulting in equal or lower hospital costs, as documented by various randomized control trials. Levobupivacaine exerts its pharmacological action through reversible blockade of neuronal sodium channels. The dose as well as the route of administration of levobupivacaine determines the plasma concentration following therapeutic administration as the absorption is dependent upon the vascularity of the tissue.⁷⁻¹⁰ Hence; under the light of above mentioned data, the present study was undertaken for assessing the efficacy of Intraperitoneal Instillation of Levobupivacaine (0.25%) plus Dexmedetomidine for postoperative analgesia in patients undergoing laparoscopic cholecystectomy.

In the present study, a total of 40 patients were analyzed and were broadly divided into two study groups; group A and the group B. 44.4 and 46.8 years was the mean age of the patients of the group A and group B. Majority of the patients of both the study groups were males. Among the patients of group A, mean VAS at baseline, 1 hour, 2 hours, 8 hours, 12 hours and 24 hours was 2.2, 2.1, 2.2, 1.4, 1.2 and 0.8 respectively. Among the patients of group B, mean VAS at baseline, 1 hour, 2 hours, 8 hours, 12 hours and 24 hours was 3.1, 2.7, 3.1, 2.5, 2.1 and 0.7 respectively. Chiruvella S et al compared the antinociceptive effects of IP dexmedetomidine combined with ropivacaine with that of IP ropivacaine alone in the patients undergoing laparoscopic hysterectomy. The patients were allocated into the following two groups: The patients in ropivacaine group (R group) (N = 30) were given 30 mL of 0.2% ropivacaine plus 2 mL of normal saline; the patients in ropivacaine plus dexmedetomidine group (RD group) (N = 30) were given 30 mL of 0.2% ropivacaine combined with 1 µg/kg dexmedetomidine (diluted in 2 mL normal saline) through trocars. They concluded that antinociceptive effects of the intraperitoneal instillation of ropivacaine in combination with dexmedetomidine is superior to ropivacaine alone.¹¹

While comparing the mean VAS at different time intervals in between group A and group B, significant results were obtained. Among the patients of group A, at baseline, 1 hour, 2 hours, 8 hours, 12 hours and 24 hours, number of patients requiring rescue analgesia was 0, 1, 3, 2, 0 and 0 respectively. Among the patients of group B, at baseline, 1 hour, 2 hours, 8 hours, 12 hours and 24 hours, number of patients

requiring rescue analgesia was 0, 5, 7, 3, 3 and 1 respectively. While comparing the number of patients requiring rescue analgesia at different time intervals in between group A and group B, significant results were obtained. Khurana S et al assessed the analgesic efficacy of the combination of bupivacaine and buprenorphine in alleviating postoperative pain following laparoscopic cholecystectomy. They analyzed 90 adults admitted for elective laparoscopic cholecystectomy. After the procedure, subjects were divided into three equal groups to conduct the study. Three Groups A, B, and C had intraperitoneal instillation of the 25 ml of physiological saline (0.9% normal saline), 0.25% of bupivacaine, 0.25% bupivacaine, and 0.3 mg buprenorphine, respectively. They concluded combination of buprenorphine and bupivacaine intraperitoneally is comparatively more effective in relieving postoperative pain in comparison to intraperitoneal instillation of bupivacaine alone for postoperative pain management after laparoscopic cholecystectomy.¹²

Mean time to rescue analgesia among the patients of group A and group B was 149.5 minutes and 51.8 minutes respectively. Significant results were obtained while comparing the mean time to first rescue analgesia among patients of both the study groups. Govil N et al designed randomized double blind placebo controlled study to study the effect of intraperitoneal instillation of levo-bupivacaine along with clonidine for pain relief after laparoscopic cholecystectomy. 75 patients were randomized to receive 20 ml of 0.9% normal saline as placebo (group I), 20 ml of 0.5% levo bupivacaine (group II) and 20 ml of 0.5% levo bupivacaine with 1mcg/kg clonidine (group III) intraperitoneally. They concluded that Intraperitoneal instillation of levobupivacaine along with clonidine in a dose of 1mcg/kg is superior to levobupivacaine alone without having any significant adverse effects.¹³

CONCLUSION

From the above results, the authors conclude that Levobupivacaine can be utilized efficaciously for controlling postoperative analgesia in patients undergoing laparoscopic cholecystectomy.

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