ORIGINAL RESEARCH

Comparison of Ropivacaine and Levo-bupivacaine instilled intra-abdominally during laparoscopic surgery for acute appendicitis

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ABSTRACT
Background: Pain, nausea, vomiting, chest infections, and DVT risks are postoperative issues associated with abdominal surgery. These issues cause delayed ambulation, higher morbidity, and longer hospital stays, all of which raise health care expenditures. The present study was conducted to compare Ropivacaine and Levo-bupivacaine instilled intra-abdominally during laparoscopic surgery for acute appendicitis. **Materials & Methods:** 90 patients classed as ASA I and II with acute appendicitis of both genderswere divided into 3 groups of 30 each. Group I, the placebo group, received 50 mls of 0.9% saline, Group II received 50 mls, (0.75% Ropivacaine plus 0.9% saline) at a dose of 3 mg/kg and Group III received 50 mls, (0.5% Levo-bupivacaine plus 0.9% saline) at a dose of 2 mg/kg. Parameters such as amount of PCA morphine used, and side effects were noted. **Results:** Group I had 15 males and 15 females, group II had 16 males and 14 females and group III had 17 males and 13 females. The mean morphine used in group I was 24.5 mg/ml, in group II was 11.9 mg/ml and in group III was 11.2 mg/ml. The difference was significant (P< 0.05). Nausea/ vomiting was seen in 5 in group I and 1 each in group II and III. Headache was seen in 3 in group I and 2 patients in group III. The difference was significant (P< 0.05). **Conclusion:** Although some studies have suggested that Ropivacaine is less effective than Bupivacaine, there doesn't seem to be any difference between the two medications in terms of pain alleviation. For laparoscopic surgery, it is advantageous to administer a local anesthetic beforehand to reduce post-operative pain.

Keywords: acute appendicitis, Ropivacaine, Levo-bupivacaine

INTRODUCTION

Pain, nausea, vomiting, chest infections, and DVT risks are postoperative issues associated with abdominal surgery. These issues cause delayed ambulation, higher morbidity, and longer hospital stays, all of which raise health care expenditures.[1] Many of these issues have been shown to be resolved by laparoscopic surgery, and administering a local anesthetic to lessen postoperative pain appears to be an extra benefit. According to studies, laparoscopic surgery has less overall problems.[2] The majority of our hospital's anesthetists do not treat these patients under the acute pain program since laparoscopic procedures are less invasive. Typically, the surgeons in the ward employ oral opioids and paracetamol to treat postoperative pain, which tends to increase the frequency of nausea and vomiting.[3]

Because of its safer profile than buprevacaine, ropivacaine has become more often employed in recent years.[4] Levobupivacaine, which is currently on the market, is reportedly safer than buprevacaine and has a safety profile similar to that of ropivacaine. Ropivacaine and levobupivacaine are made as a single levorotatory isomer, which reduces the possibility of systemic toxicity.[5]The present study was conducted to compare Ropivacaine and Levo-bupivacaine instilled intra-abdominally during laparoscopic surgery for acute appendicitis.

MATERIALS & METHODS

The study was carried out on 90 patients classed as ASA I and II with acute appendicitis of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 3 groups of 30 each. Group I, the placebo group, received 50 mls of 0.9% saline, Group II received 50 mls, (0.75% Ropivacaine plus 0.9% saline) at a dose of 3 mg/kg and Group III received 50 mls, (0.5% Levo-bupivacaine plus 0.9% saline) at a dose of 2 mg/kg. Parameters such as amount of PCA morphine used, and side effects were noted. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II	Group III
Drug	0.9% saline	0.75% Ropivacaine plus 0.9% saline	0.5% Levo-bupivacaine plus 0.9% saline
M:F	15:15	16:14	17:13

Table I shows that group I had 15 males and 15 females, group II had 16 males and 14 females and group III had 17 males and 13 females.

Table II Comparison of morphine used

Groups	morphine used (mg/ml)	P value
Group I	24.5	0.01
Group II	11.9	
Group III	11.2	

Table II, graph I show that mean morphine used in group I was 24.5 mg/ml, in group II was 11.9 mg/ml and in group III was 11.2 mg/ml. The difference was significant (P< 0.05).

Graph I Comparison of morphine used

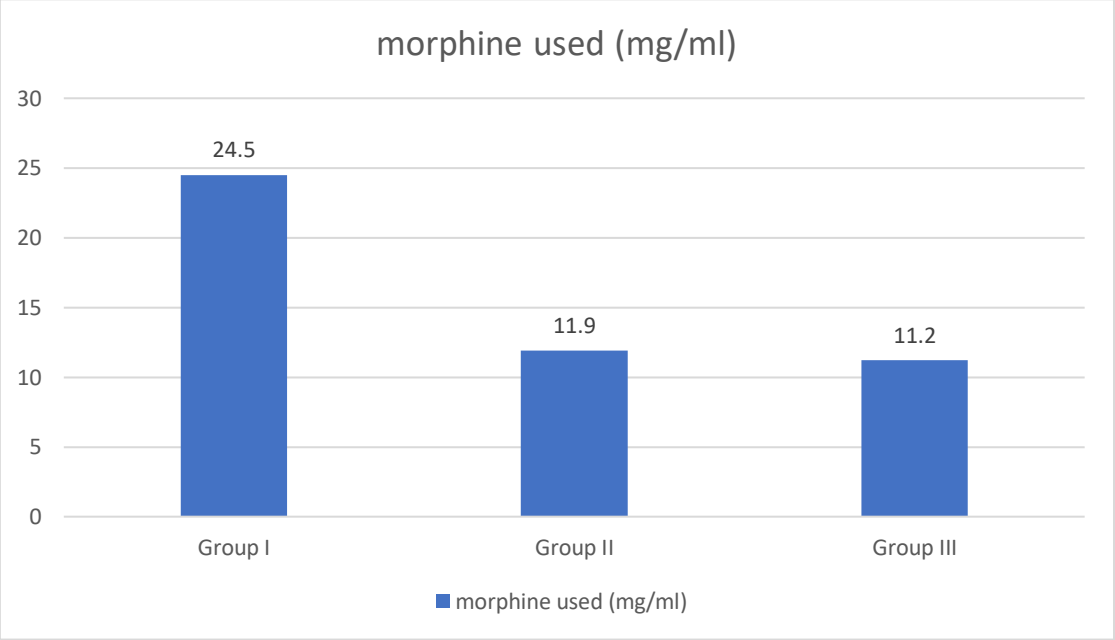

Table III Comparison of side effects

Side effects	Group I	Group II	Group III	P value
Nausea/ vomiting	5	1	1	0.05
Headache	3	0	2	

Table III shows that nausea/ vomiting was seen in 5 in group I and 1 each in group II and III. Headache was seen in 3 in group I and 2 patients in group III. The difference was significant (P< 0.05).

DISCUSSION

The multimodal analgesic principle is a concept used by many anesthesiologists and surgeons to maximize the analgesic efficacy and minimize the side-effects associated with the use of each class of analgesics, especially opioids. The use of local anesthetics in central and peripheral nerve blockades, which include wound infiltration, can improve pain score in the

postoperative period. Postoperative pain control does influence a patient's speedy recovery and discharge from the hospital, and recent studies indicate that adequate acute pain control would also lower the risk of developing chronic pain.[6]The present study was conducted to compare Ropivacaine and Levo-bupivacaine instilled intra-abdominally during laparoscopic surgery for acute appendicitis.

We found that group I had 15 males and 15 females, group II had 16 males and 14 females and group III had 17 males and 13 females.Subramaniam T et al[7]compared the pain relief provided by Ropivacaine and Levo-bupivacaine instilled intra-abdominally during laparoscopic surgery for acute appendicitis. No significant difference was noted between the Ropivacaine and Levo-bupivacaine groups (p = 1); utilization of morphine was similar for both drugs. However, significant difference was noted between placebo and local anaesthetics (p = 0).

We found that mean morphine used in group I was 24.5 mg/ml, in group II was 11.9 mg/ml and in group III was 11.2 mg/ml. Numerous investigations into the potency of the pharmaceuticals have been conducted, and the findings seem to vary depending on the kind of anesthesia they are used for.[8,9] Levo-bupivacaine was reported to be 15% more effective when used for obstetric labor analgesia, but other research suggest that Ropivacaine and Levo-bupivacaine are equipotent for labor analgesia. Levo bupivacaine was 19.3% more effective than Ropivacaine when administered to laboring women, while the difference was not statistically significant, and the safety outcomes were comparable.[10,11]

We observed that nausea/ vomiting was seen in 5 in group I and 1 each in group II and III. Headache was seen in 3 in group I and 2 patients in group III. Khaw K et al[12]studied 72 patients undergoing elective cesarean delivery. An epidural catheter was placed at the L2-L3 vertebral interspace. Lumbar puncture was then performed at the L3-L4 vertebral interspace, and patients were randomized to receive a dose of spinal ropivacaine diluted to 3 ml with normal saline: 10 mg (n = 12), 15 mg (n = 20), 20 mg (n = 20), or 25 mg (n = 20). Sensory changes assessed by ice and pin prick and motor changes assessed by modified Bromage score were recorded at timed intervals. A dose was considered effective if an upper sensory level to pin prick of T7 or above was achieved and epidural supplementation was not required intraoperatively. Anesthesia was successful in 8.3, 45, 70, and 90% of the 10-, 15-, 20-, and 25-mg groups, respectively. A sigmoid dose-response curve and a probit log dose-response plot were obtained, and the authors determined the ED50 (95% confidence interval) to be 16.7 (14.1-18.8) mg and the ED95 (95% confidence interval) to be 26.8 (23.6-34.1) mg. Duration of sensory and motor block and degree of motor block, but not onset of anesthesia, were positively related to dose.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that although some studies have suggested that Ropivacaine is less effective than Bupivacaine, there doesn't seem to be any difference between the two medications in terms of pain alleviation. For laparoscopic surgery, it is advantageous to administer a local anesthetic beforehand to reduce post-operative pain.

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