ORIGINAL RESEARCH PAPER

Anaesthesiology

COMPARISON OF INTRAVENOUS PARACETAMOL AND INTRAVENOUS KETOROLAC AS PREEMPTIVE ANALGESIA IN LAPAROSCOPIC SURGERIES

KEY WORDS: Preemptive analgesia, Ketorolac, Paracetamol

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ABSTRACT

INTRODUCTION: Preemptive analgesia is one of the upcoming strategies of pain management. Its an analgesic intervention before the surgical noxious stimulus arises. The aim of this study is to compare between the administration of I.V. Paracetamol and I.V. Ketorolac as preemptive analgesia in regards of hemodynamic, pain control, duration of analgesia, cumulative doses of intraoperative opioids and their related side-effects and to compareefficacy between these drugs for postoperative analgesia and their cumulative doses.

MATERIALS AND METHODS: Patients will be randomized into two groups, Group P and Group K of 24 patients each belonging to both sexes of American Society of Anesthesiologists physical status I and II, aged 18-58 years with body weight of 50-60 kg scheduled for elective laparoscopic procedures with duration less than 3hours under general anesthesia. Group P will be receiving I.V. Paracetamol 1gm and Group K will be receiving I.V. Ketorolac 30mg .VAS score was assessed immedietly from the post operative period till 12 hours.

RESULTS: In our study we found that postoperative VAS score was statistically significant, with a p value<0.0among the patients who received I.V.Ketorolac infusion in the immediate post operative period till 12 hours. The use of rescue analgesia was more among the Paracetamol group that was 6 patients when compared to 2 patients among the Ketorolac group.

CONCLUSION: Preemptive use of Ketorolac infusion provides better andprolonged post operative analgesia with low pain scores and lesser requirement of rescue analgesia, compared to Paracetamol infusion .

INTRODUCTION:

Pain occurs after laparoscopy, but is usually less and shorter than that caused by the same surgicalprocedure made possible by laparotomy. The reduction in pain has made the early discharge from the hospital possible, provided that the control of the residual pain is adequate and that the drugs or techniques used for analgesia are safe enough. Pain may occur in the upper abdomen, lower abdomen, back, or shoulders.

In addition to the trauma caused to the abdominal wall and the visceral organs by the endoscope and the surgical instruments, there are other mechanisms responsible for pain after laparoscopy, they are mainly due to rapid distension of the peritoneum associated with tearing of blood vessels, traumatic traction of the nerves and release of inflammatory mediators.

Preemptive analgesia is one of the upcoming strategies of pain management. It means an analgesic intervention before the surgical noxious stimulus arises,which has beneficial effectson the occurrence and intensity of postoperative pain. The physical injury generates a complexstress response that contributes to the experience of postoperative pain. To cope the injury, the release ofneurotransmitters, peptides, endocannabinoids,cytokinesand hormonesoccur, all of which operate interdependently through various nervous, endocrine, and immune processes.Hence, preemptive analgesia partially decreases these influencing factors, which in turn, prevents the sensitizing effects of the surgical noxious stimuli.

Preemptive I.V. Ketorolac and IV Paracetamol produces significant opioid sparing effects following laproscopic surgeries. It decreased 24 h total opioid consumption and increases the time to first analgesic use.

NSAIDs have traditionally been used to relieve pain after minor surgery or have been prescribed two or three days after major surgery when the more powerful analgesics have been withdrawn.Moreover, it has consistently been shown that NSAIDs given soon after major surgery reduce opioid requirements by about one-third.

MATERIALS AND METHODS:

After ethical committee approval and informed consent, 48 patients belonging to "American society of Anaesthesiology" (ASA) grade I, & II aged between 18 to 58 years, scheduled for elective laparoscopic surgeries lasting less than 3hrs duration wereselected.

Exclusion criteria were

1. ASA grade IV, and V.
2. Patients with a history of malignant hyperthermia, pregnant, or lactating women.
3. Patients with known allergy to either Paracetamol or ketorolac.
4. Laproscopic surgeries lasting more than 3 hours.

Thorough preanesthetic evaluation and routine investigations were carried out before taking up the patient for surgery. An informed and written consent was taken from the patients enrolled for the study and patients were explained regarding Visual Analogue Scale.

Then patients were divided into two groups chosen at random, using closed envelop method:
Group P(PARACETAMOL): 24 patients Group K (KETOROLAC): 24 patients.

Patients were Premedicated with tab Ranitidine 150 mg at night before surgery and 2 hours prior to induction .30 minutes before induction of anaesthesia, either 1 gram intravenous Paracetamol or 30mg of Ketorolac in 100 ml normal saline was administered based on randomization.On arrival to the operating room, routine monitoring was done of the following parameters:Heart Rate, NIBP, ECG, SPO_2.

A peripheral cannula was secured. Intravenous infusion of Ringer lactate was started. Intravenous Midazolam 1 mg and intravenous Fentanyl 1.5 mcg/kg was given. After preoxygenation with 100% oxygen for 3 minutes, patient was induced with intravenous Propofol 2 mg/kg and endotracheal intubation facilitated by Vecuronium 0.1 mg/kg. Anaesthesia was maintained with Isoflurane 1 MAC and Nitrous oxide in oxygen(70:30).At the end of surgery, residual neuromuscular paralysis was antagonized with Neostigmine 0.05 mg/kg and

Glycopyrrolate 0.01 mg/kg. After satisfactory recovery trachea was extubated and patient was shifted to post anaesthesia care unit. Patients were assessed for pain using Visual analogue score postoperatively for 24 hrs. The time of first rescue analgesic requirement and the total dosage were recorded.

RESULTS

Results were assessed using MANN WHITNY U TEST, and p value less than 0.05 were considered statistically significant.

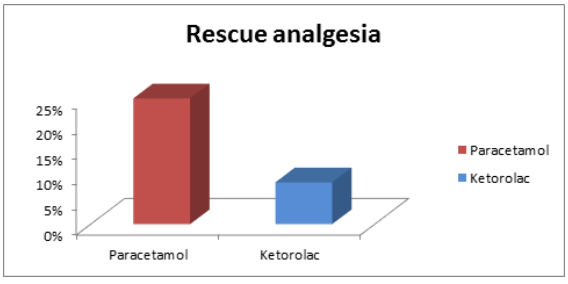
Comparison OfVAS Scores Among The Two Groups

Table 1

VAS Score Time	Group Paracetamol	Group Ketorolac	P value
1 hour	2.75±0.44	0.00±0	<0.001
2 hour	2.00±0.46	0.45±0.69	<0.001
4 hour	3.9±0.3	2.8±0.2	<0.001
6hour	2.83±0.38	2.53±0.87	<0.011
8hour	2.15± 0.49	1.70± 0.57	<0.011
12 hour	2.9± 0.8	2.8± 0.1	<0.46

VAS scores at 1hr, 2hr and 4hr was similar among the two groups. However at 6hrs and 8hrs the VAS scores were better with ketorolac group compared to paracetamol group which was statistically significant with p values <0.001, <0.01 respectively.

Usage Of Rescue Analgesia:



Graph 1

Usage of rescue analgesia was more among the paracetamol group where 25% of the patients required rescue analgesia.

DISCUSSION

In our study it showed that preemptive usage of intravenous ketorolac 30 mg infusion provides better postoperative analgesia with better hemodynamic stability and lesser side effects when compared to preemptive use of intravenous paracetamol 1 gm infusion in elective laproscopic surgeries.
Rastogi et al in the year 2016 did a study on 90 patients, 45 patients in each group to compare the efficacy of preemptive intravenous use of ketorolac 30 mg and paracetamol 1gm in patients undergoing laproscopic cholecystectomy. Postoperative pain was accessed by VISUAL ANALOGUE SCORE at different time intervals. Rescue analgesia was given when the VAS score was above 3 with injection tramadol 50 mg. They concluded that intravenous ketorolac infusion was superior, when compared to iv paracetamol as preemptive analgesic with minimum side effects and hemodynamic stability.

Patel MK et al in the year 2018 did a double blinded comparative study of preemptive analgesic property of paracetamol infusion and diclofenac sodium infusion among 100 patients, 50 in each group. They concluded that diclofenac sodium was slightly better than iv paracetamol infusion in controlling postoperative pain.

CONCLUSION

This prospective double blinded study done in 48 patients undergoing laproscopic surgeries under general anesthesia concluded that preemptive use of intravenous ketorolac infusion was superior over intravenous paracetamol infusion with better hemodyanamic stability and lesser sideeffects.

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