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Original contribution

Comparison of postoperative analgesic efficacy of intraoperative single-dose intravenous administration of dexketoprofen trometamol and diclofenac sodium in laparoscopic cholecystectomy☆

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Abstract

Study objective: The aim of this study is to compare the effects of intravenous single-dose dexketoprofen trometamol and diclofenac sodium 30 minutes before the end of the surgery on relief of postoperative pain in patients undergoing laparoscopic cholecystectomy.

Design: A randomized fashion.

Setting and patients: Sixty (American Society of Anesthesiologist class I-II) patients undergoing laparoscopic cholecystectomy were divided into 2 groups

Intervention: Patients in group DT received 50 mg dexketoprofen trometamol, whereas patients in group DS received 75 mg diclofenac sodium, intravenously 30 minutes before the end of surgery.

Measurements: Postoperative pain intensity, morphine consumption with patient-controlled analgesia, time to first analgesic requirement, complications, rescue analgesic (intravenous tenoxicam 20 mg) requirement, and duration of hospital stay were recorded.

Main results: Postoperative pain visual analog scale scores were similar in the follow-up periods ($P > .05$). Patient-controlled analgesia morphine consumption was significantly less in group DT compared with group DS in all postoperative follow-up periods (2 and 4 hours: $P < .01$; 8, 12, 18, and 24 hours: $P < .001$). In the postoperative period, the first analgesic requirement time was significantly longer in group DT compared with group DS ($P < .01$). In addition, the number of patients requiring rescue analgesic was higher in group DS compared with group DT ($P < .01$). Other follow-up parameters were similar.

☆ No conflict of interest.

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Conclusion: In our study, administration of intravenous single-dose dexketoprofen trometamol 30 minutes before the end of surgery provided effective analgesia with reduced consumption of opioids and requirement for rescue analgesic compared with diclofenac sodium in patients undergoing laparoscopic cholecystectomy. For this reason, we believe that, as a part of multimodal analgesia, dexketoprofen trometamol provides more effective analgesia than diclofenac sodium in patients undergoing laparoscopic cholecystectomy.

1. Introduction

Postoperative pain is an acute phenomenon which starts with surgical trauma and gradually decreases with wound healing. Inadequate postoperative pain management may lead to negative consequences such as late mobilization, late discharge, development of chronic pain, lower patient satisfaction, prolonged recovery, and increased treatment costs [1].

Laparoscopic cholecystectomy is a frequently used surgical operation in treatment of gall stones. Pain intensity after laparoscopic cholecystectomy is defined as mild to moderate [2,3]. Most of the patients suffer from severe abdominal and shoulder pain in the early postoperative period of laparoscopic cholecystectomy and require strong analgesia like opioids, nonselective anti-inflammatory drugs, selective cyclooxygenase 2 inhibitors, and local anesthetic infiltration.

In recent years, multimodal analgesia method which combines additive and synergistic effects of different analgesics with fewer adverse effects and provides more effective analgesia has been recommended. For this purpose, nonsteroidal anti-inflammatory drugs (NSAIDs) and opioids are commonly used together.

Dexketoprofen trometamol is an *S*-(+)-2-(3-benzoylphenyl) propionic acidtromethamine salt. Dexketoprofen is an NSAID which has a rapid onset of effect. Dexketoprofen trometamol is more potent and causes less gastrointestinal adverse effects compared with ketoprofen [4]. Dexketoprofen trometamol administration was found to be highly effective in treatment of moderate to severe pain when used as an analgesic in osteoarthritis, dysmenorrhea, gynecologic, orthopedic, and dental surgery [5–9].

Diclofenac sodium is a phenylacetic acid derivative NSAID with the chemical structure of 2-[2-(2,6-dichlorophenyl) aminophenyl] etanoik acid. Diclofenac sodium is commonly used to treat mild to moderate postoperative and posttraumatic pain accompanied by inflammation. Diclofenac sodium administration was found to be highly effective in the management of postoperative pain in various surgical procedures [10–14].

There are a limited number of studies in the literature based on evaluation of analgesic efficacy of dexketoprofen trometamol vs diclofenac sodium [15–17]; however, according to our research, no study has been found that compares the analgesic efficacy of dexketoprofen trometamol and diclofenac sodium in laparoscopic cholecystectomy procedures.

With this present study, it was aimed to investigate the effects of intravenous single dose of dexketoprofen trometamol and diclofenac sodium as a part of multimodal analgesia 30 minutes before the end of the surgery on relief of postoperative pain in patients undergoing laparoscopic cholecystectomy.

2. Materials and methods

Following approval from the Uludag University Ethics Committee and patient written informed consent, in a randomized fashion, 60 American Society of Anesthesiologists (ASA) class I-II patients between 18 and 75 years of age undergoing laparoscopic cholecystectomy were included in our study and divided into 2 groups.

Patients of ASA class III-IV and patients with hemorrhagic diathesis, clotting disorder, history of hypersensitivity to any of the drugs used in this study, peptic ulcer disease, or gastrointestinal bleeding were excluded.

All the cases were verbally informed about the purpose and the content of the study before the surgery, and written informed consent forms were signed by the subjects who agreed to participate to the study. Information was given about the patient-controlled analgesia (PCA) and visual analog scale (VAS) assessment to participants. The patients were divided into 2 random study groups by using the sealed envelope technique.

Premedication was not applied to participants for sedation. The patients were routinely monitored (electrocardiogram, peripheral oxygen saturation [Spo_2], noninvasive blood pressure, end-tidal carbon dioxide [$ETco_2$]) in the

Table 1 Demographic data, duration of anesthesia, and fentanyl consumption (mean ± SD, n).

	Group DT (n = 30)	Group DS (n = 30)
Age (y)	50 ± 13.4	53 ± 13.9
Weight (kg)	75 ± 13.5	74 ± 13.4
Height (cm)	163 ± 7.7	163 ± 7.8
ASA I/II (n)	17/13	10/20
Sex M/F (n)	11/19	6/24
Fentanyl consumption (μg)	125.8 ± 31.1	141.6 ± 32.3
Duration of anesthesia (min)	70 ± 13.9	75 ± 13.7