

Comparing Early Postoperative Period Analgesic Effect of Dexketoprofen Trometamol and Lornoxicam in Mediastinoscopy Cases

Mediastinoskopi Olgularında Deksketoprofen Trometamol ve Lornoksikam'ın Postoperatif Erken Dönem Analjezik Etkinliklerinin Karşılaştırılması

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Abstract

Objective: In this study, we aimed comparing early postoperative period analgesic effectiveness and the effects on opioid consumption of intravenous dexketoprofen and lornoxicam that are given preemptively.

Materials and Methods: Forty patients, planned elective mediastinoscopy, were included in this prospective randomized study. These patients were classified in two groups, group D for dexketoprofen trometamol and group L for lornoxicam, randomly. 20 minutes before the operation 50 mg dexketoprofen trometamol and 8 mg lornoxicam were injected intravenously for group D and group L respectively. In postoperative intensive care unit, pain scores, mean arterial pressures, heart rates and peripheric O₂ saturations of patients were recorded at 0, 10, 20, 60, 90 and 120th minutes.

Results: When we evaluate the VAS score of the groups, there was a significant decrease in group D in all measured times statistically comparing to group L ($p<0.001$). When both group were evaluated in itself according to 0 minute time, in group L there was a significant decrease at 10 minutes time ($p<0.0001$) but in group D there was not a significant decrease ($p>0.05$).

Conclusion: Since intravenous dexketoprofen, applied preemptively, has more potent analgesic effect and causing less opioid consumption in early postoperative period, is better than intravenous lornoxicam.

Key Words: Dexketoprofen trometamol, Lornoxicam, Mediastinoscopy, Postoperative pain

Özet

Amaç: Çalışmamızda preemtif uygulanan intravenöz deksketoprofen ile lornoksikam'ın erken postoperatif dönem analjezik etkinliği ve opioid tüketimi üzerine etkilerini karşılaştırmayı amaçladık.

Gereç ve Yöntem: Prospektif randomize çalışmaya elektif mediastinoskopi planlanan 40 hasta dahil edildi. Olgular deksketoprofen trometamol (Grup D) ve lornoksikam (Grup L) grubu olarak rastgele 20 kişilik iki gruba ayrıldı. Operasyondan 20 dk önce grup D'ye 50 mg deksketoprofen trometamol, grup L'ye 8 mg lornoksikam intravenöz olarak uygulandı. Postoperatif yoğun bakım ünitesine alınan hastaların ağrı skorları, ortalama arter basınçları, kalp atım hızı ve periferik oksijen saturasyonları 0, 10, 20, 60, 90, 120. dk'da kaydedildi.

Bulgular: Grupların VAS puanı değerlendirildiğinde, grup D' de grup L'ye göre tüm ölçüm zamanlarında istatistiksel olarak anlamlı düşme vardı ($p<0.001$). Her grup kendi içinde 0. dk' ya göre değerlendirildiğinde grup L'de 10. dk'dan itibaren anlamlı düşme ($p<0.0001$) varken, grup D'de anlamlı fark olmadığı bulundu ($p>0.05$).

Sonuç: Preemtif uygulanan intravenöz deksketoprofen, erken postoperatif dönemdeki analjezik etkinliği ve daha az opioid tüketimi ile IV lornoksikam'dan üstündür.

Anahtar Kelimeler: Deksketoprofen, Lornoksikam, Mediastinoskopi, Postoperatif ağrı

Introduction

Preemptive analgesia, which is treatment to prevent pain before a surgical operation, should be started prior to the operation and continued during the stimulation of nociceptors in the wound. A number of studies have shown that preemptive analgesia decreases postoperative pain and the need for analgesics [1, 2].

Adding trometamol to dexketoprofen (36.9 mg) increases its solubility and speeds its oral absorption. It has advantages

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tages over ketoprofen [3]. The advantages of dexketoprofene trometamol are more potential, fewer adverse gastrointestinal effects and a more rapid onset of its effects [4-6].

Lornoxicam is a non-steroidal anti-inflammatory drug (NSAID) of the oxicam class. The plasma half-life is longer than other oxicams, and for this reason, it has fewer adverse effects [7]. In experimental studies, it has been shown that lornoxicam plays a role in decreasing hypersensitivity by causing antinociception via spinal COX inhibition [8].

In this study, we aimed to compare the effects of an intravenous (IV) form of dexketoprofene trometamol and lornoxicam on postoperative pain in mediastinoscopy cases.

Materials and Methods

After obtaining the approval of the ethical committee and informed consent of the patients, the study was started. Forty patients, aged 22 to 52 years, who were scheduled for day-case mediastinoscopy in ASA (American Society of Anesthesiologists) class I-III were enrolled in this study. These cases were randomly classified into two groups, group D for dexketoprofene trometamol administration and group L for lornoxicam administration.

Patients who had a history of drug allergy, coagulation problems, mental retardation, dementia, peptic ulcers and stomach bleeding were excluded from the study.

Premedication was not administered to patients. In the preoperative period, information about the Visual Analog Scale (VAS) and our study were given. The VAS is a scale that is used to assess patients' pain levels. Patients were educated on the use of the 10-point visual analog scale (VAS) for pain assessment, 0 for no pain and 10 for maximum pain. After the operations, the patients evaluated their pain levels according to this scale.

In the operating room, we began a peripheral IV line, administered Isolyte solution, measured noninvasive arterial pressure and heart rate and monitored ECG and SpO₂ for all patients. Twenty minutes before the operations, 50 mg dexketoprofene trometamol and 8 mg lornoxicam were administered intravenously for groups D and L, respectively. Induction of anesthesia was performed with 1 µg kg⁻¹ pentalan (Fentanil, Braun, Germany), 5-7 mg kg⁻¹ thiopental sodium (Pentotal Sodium, Abbott, Italy), and 0.1 mg kg⁻¹ vecuronium (Blok-L, Mustafa Nevzat, Turkey), and maintenance was provided with 1-2% sevoflurane (Sevorane, Abbott, England) and 100% O₂. Opioids were not used, and sevoflurane was preferred to maintain anesthesia because the mediastinoscopy operations lasted for only a short period of time.

The most painful period of mediastinoscopy operations is the first 120-150 minutes postoperation.

Therefore, in all patients, hemodynamic parameters, respiratory and analgesia data in the early postoperative period

were assessed. For this reason, the first measurement was accepted as minute 0, and the values of systolic arterial pressure (SAP), diastolic arterial pressure (DAP), mean arterial pressure (MAP), heart rate, SpO₂, VAS at 10, 20, 60, 90 and 120 minutes were compared to the 0-minute value. IV morphine was given for rescue analgesia in patients whose VAS value was above 5. The anesthesia and surgery times were determined.

The SPSS for Windows 15.0 program was used for statistical analyses, a t-test was used for comparing demographic data between groups and data for patient heart rates, SpO₂ and noninvasive arterial blood pressures. To compare the VAS data of the two groups, the time-related VAS data and the adverse effects of drugs, the Mann-Whitney U-test, Wilcoxon-signed rank test and chi-square test were used, respectively. Data were presented as means±standard deviation. Values of p<0.05 were accepted as statistically significant.

Result

There were no statistically significant differences in the demographic data and ASA classifications between groups (p>0.05) (Table 1).

No statistically significant difference was found in the postoperative values of SAP, DAP and MAP both between groups and within groups according to the zero-minute time point (p>0.05). There were no significant differences in heart rate values. The SpO₂ value was not less than 92% for either group, so there were no statistically significant differences both between groups and within groups according to the zero-minute time point (p>0.05).

When we evaluated the VAS scores of the two groups, there was a significant decrease in all measurement periods in group D, compared with group L (p<0.001). When the other time points were compared to the zero-minute time point, there was a statistically significant decrease at minute 10 (p<0.023), minute 20 (p<0.002), minute 60 and minutes 90-120 (p<0.0001). However, this significant difference was not found for group D (p>0.05) (Figure 1). IV morphine was given for rescue analgesia in 4 patients in group L whose VAS values were greater than 4.

Table 1. Demographic data and ASA scores

	Group D	Group L
Age (year)	49±3	55±16
Sex (F/M)	6/14	2/18
Weight (kg)	70±18	75±12
Height (cm)	166±5	170±9
ASA (I/II/III)	11/6/3	8/9/3
ASA: American Society of Anesthesiologists		

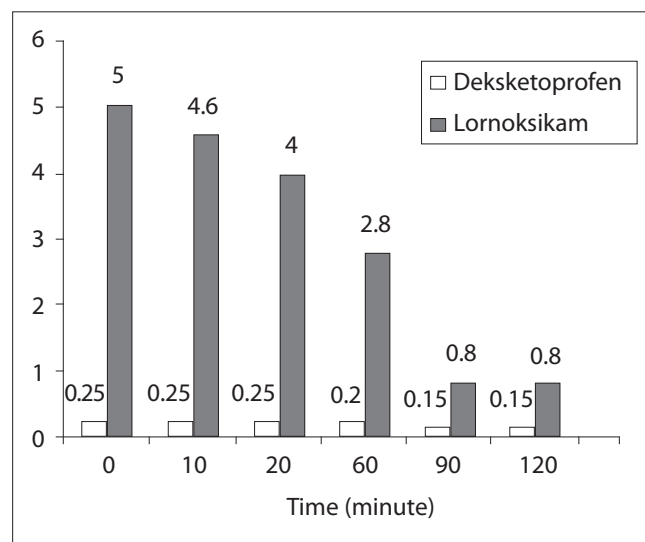


Figure 1. VAS scores for both groups ($p < 0.001$).

The anesthesia and surgery times were $49.6 (30 \pm 75)$ min and $38.7 (20 \pm 65)$ min, respectively.

Discussion

Preemptive analgesia is a treatment aimed at preventing the central hypersensitivity that causes postoperative pain. Central sensitization can be prevented and pain memory in the central nervous system can be reduced by this analgesic method. Thus, the beginning of postoperative pain can be retarded, and the intensity and length of this pain can be decreased. A good preemptive analgesia hastens recovery from surgery and decreases the incidences of morbidity and mortality [9].

Dexketoprofen is a NSAID drug and is preferred for acute pain, because it is absorbed very rapidly, and its effects begin very quickly. In one study, it was shown that the analgesic effect of dexketoprofen begins in 30 minutes, but the effect of ketoprofen takes longer to begin [10]. In animal studies, it has been shown that dexketoprofen is two times more potent than ketoprofen in its analgesic and anti-inflammatory effects [11]. In preclinical studies, although it is effective at very small doses, it is accepted that 25 mg of dexketoprofen is equal to 50 mg of dexketoprofen in certain clinical studies [12]. It was found that 25 mg of dexketoprofen is more effective than 12.5 mg, but there was no difference between 25 mg and 50 mg in analgesic effectiveness [10].

In postoperative analgesia, NSAID drugs are used in different forms. Although there are oral and rectal forms of NSAIDs, there are no parenteral forms. Oral forms are not preferred in the early postoperative period because they are not

absorbed in the small intestine and can cause delayed stomach emptying. Oral forms of NSAID drugs can cause dyspepsia and gastric erosion. When there are both oral and parenteral forms of a drug, the oral form is given one hour before the operation, and the parenteral form is used in the postoperative period [13].

In Tuncer's series, dexketoprofen was used in total abdominal hysterectomy cases, and it was found that postoperative morphine consumption was decreased, and pain scores were lower [14]. In other series, dexketoprofen and ketoprofen were compared in major orthopedic operations, and it was reported that opioid consumption and pain scores were lower in the dexketoprofen groups [4, 5]. Pain scores and morphine consumption were significantly decreased in the early postoperative period in our study, in accordance with these studies (Figure 1).

Mercorio et al. [15] compared the oral form of dexketoprofen and the intracervical form of mepivacaine in postmenopausal patients; they found that dexketoprofen had a more potent analgesic effect than did mepivacaine. Inan et al. [16], prior to general anesthesia, compared a group that was given oral dexketoprofen and underwent 3-1 femoral nerve blockage with 40 ml 0.25% bupivacaine and a group that only underwent 3-1 femoral nerve blockage, and they found no significant differences in the VAS scores between groups.

Dexketoprofen, the R (-) enantiomer of ketoprofen, has twice the analgesic and anti-inflammatory effects of ketoprofen. In animal studies, it was shown that dexketoprofen has an analgesic effect similar to μ opioid agonists and prevents the nociceptive response [17]. It was shown that, in addition to its analgesic effects, it also prevents the anti-inflammatory response in hip prosthesis surgery [3]. In a study that evaluated the use of dexketoprofen after operations, it was shown that dexketoprofen decreased the need for tramadol in the postoperative period [13].

Inan et al. [16] administered 1 g paracetamol and 50 mg dexketoprofen trometamol IV when suturing the dermis in operations; they reported that there were no statistically significant differences between groups, and there were no adverse effects, such as hypotension, tachycardia, and respiratory depression, that required treatment. In our study, hypotension, tachycardia, and respiratory depression were not diagnosed in any patient.

Because IV dexketoprofen, applied preemptively, has a more potent analgesic effect and leads to decreased opioid consumption in the early postoperative period, it is superior to IV lornoxicam.

Conflict of interest statement: The authors declare that they have no conflict of interest to the publication of this article.

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