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SCIENTIFIC ARTICLE

Comparison of the postoperative analgesic effects of naproxen sodium and naproxen sodium-codeine phosphate for arthroscopic meniscus surgery☆

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KEYWORDS
Arthroscopy;
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Codeine phosphate

Abstract
Background and objectives: Nonsteroidal anti-inflammatory drugs (NSAIDs) are frequently used to control arthroscopic pain. Addition of oral effective opioid ''codeine'' to NSAIDs may be more effective and decrease parenteral opioid consumption in the postoperative period. The aim of this study was to compare the efficacy and side effects of naproxen sodium and a new preparation naproxen sodium-codeine phosphate when administered preemptively for arthroscopic meniscectomy.
Methods: Sixty-one patients were randomized into two groups to receive either oral naproxen sodium (Group N) or naproxen sodium-codeine phosphate (Group NC) before surgery. The surgery was carried out under general anesthesia. Intravenous meperidine was initiated by patient-controlled analgesia (PCA) for all patients. The primary outcome measure was pain score at the first postoperative hour assessed by the Visual Analogue Scale (VAS). Sedation assessed by Ramsey Sedation Scale, first demand time of PCA, postoperative meperidine consumption, side effects and hemodynamic data were also recorded.
Results: The groups were demographically comparable. Median VAS scores both at rest and on movement were significantly lower in Group NC compared with Group N, except 18th hour on movement ($p < 0.05$). The median time to the first demand of PCA was shorter in Group N compared with Group NC ($p < 0.001$). Meperidine consumption was higher in Group N compared with Group NC ($p < 0.001$). There was no difference between groups with respect to side effects ($p > 0.05$).
Conclusions: The combination of naproxen sodium-codeine phosphate provided more effective analgesia than naproxen sodium and did not increase side effects.

☆ This study was carried out in Baskent University, Faculty of Medicine, Department of Anesthesiology and Reanimation, Adana, Turkey.
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PALAVRAS-CHAVE
Artroscopia;
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Naproxeno sódico;
Fosfato de codeína

Comparação dos efeitos analgésicos pós-operatórios de naproxeno sódico e naproxeno sódico-fosfato de codeína em artroscopia de menisco

Resumo
Justificativa e objetivos: Os anti-inflamatórios não esteróides (AINEs) são frequentemente usados para controlar a dor após artroscopia. A adição de um opiáceo oral eficaz (codeína) aos AINEs pode ser mais efetiva e diminuir o consumo de opiáceo parenteral no pós-operatório. O objetivo deste estudo foi comparar a eficácia e os efeitos colaterais de naproxeno sódico e uma nova preparação, naproxeno sódico-fosfato de codeína, quando administrados preventivamente para meniscectomia artroscópica.
Métodos: Sessenta e um pacientes foram randomicamente divididos em dois grupos para receber naproxeno sódico por via oral (Grupo N) ou naproxeno sódico-fosfato de codeína (Grupo NC) antes da cirurgia. A cirurgia foi realizada sob anestesia geral. Meperidina intravenosa foi iniciada por meio de analgesia controlada pelo paciente (ACP) para todos os pacientes. O desfecho primário foi o escore de dor na primeira hora de pós-operatório, avaliada com a Escala Visual Analógica (EVA). A sedação foi avaliada usando a Escala de Sedação de Ramsey. A primeira demanda de ACP, o consumo de meperidina no pós-operatório, os efeitos colaterais e os dados hemodinâmicos também foram registrados.
Resultados: Os grupos foram demograficamente comparáveis. As medianas dos escores EVA tanto em repouso quanto em movimento foram significativamente menores no Grupo NC comparado ao Grupo N; exceto para movimento na avaliação de18 horas ($p < 0,05$). A mediana do tempo até a primeira demanda de ACP foi menor no Grupo N em comparação com o Grupo NC ($p < 0,001$). O consumo de meperidina foi maior no Grupo N em comparação com o Grupo NC ($p < 0,001$). Não houve diferença entre os grupos em relação aos efeitos colaterais ($p > 0,05$).
Conclusões: A combinação de naproxeno sódico-fosfato de codeína forneceu analgesia mais efetiva que naproxeno sódico, sem aumentar os efeitos colaterais.

Introduction

Arthroscopic knee surgery is a common surgical intervention. There is evidence that effective postoperative pain management facilitates discharge and more rapid functional improvement of these patients.[1,2] Nonsteroidal anti-inflammatory drugs (NSAIDs) are frequently used for controlling arthroscopic pain[1,2] and have been administered alone or as intraarticular combinations with local anesthetics or opioids for these procedures.[2,3] This group of drugs have been demonstrated to reduce pain and inflammation due to arthroscopy, as well as effusions related to inflammation, by inhibiting prostaglandin synthesis.[4] The preoperative administration of NSAIDs may be more effective in reducing postoperative pain by inhibiting prostanoid production before the development of tissue injury.[1]

Although the efficacy of oral naproxen sodium as a preemptive medication has been shown for arthroscopic knee surgery,[5] the preemptive efficacy of oral naproxen sodium-codeine phosphate has not yet been investigated to our knowledge. Codeine is a prodrug with well-known analgesic efficacy, and it is frequently used in pain management. It is metabolized to its active form, morphine, by the liver.[6]

This study aims to compare the efficacy of single preemptive dose of oral naproxen sodium versus a new combination of oral naproxen sodium-codeine phosphate on postoperative pain in adult patients undergoing arthroscopic meniscectomy.

Materials and methods

The Baskent University Institutional Review Board and Ethics Committee approved this prospective, randomized, double-blind study (Project number: KA12/268). The study was supported by Baskent University Research Fund and was completed within 6 months. Patients undergoing arthroscopic meniscectomy were included in the study. The exclusion criteria were as follows: ≤18 years of age, hypersensitivity to NSAIDs and/or codeine, history of a peptic ulcer, gastritis, upper gastrointestinal bleeding, a coagulation disorder, hepatic failure, renal impairment, pregnancy, and the use of NSAID, opioid and other analgesic agents up to the time of the surgery.

During the preoperative examination, patients were informed about the study parameters, including pain management methods to be used during the study, drugs involved and potential side effects. Written informed consent was obtained from all patients.

The randomization scheme automatically created by a computer was kept in closed envelopes. These envelopes were prepared by an anesthesiologist who was not part of the study. Before surgery, patients were assigned to either Group N or Group NC according to the randomization scheme. Drugs were given orally to both groups by a nurse unaware of the study 60 min before surgery. Patients in Group N ($n = 30$) received naproxen sodium 550 mg (Apranax Fort®, Abdi Ibrahim Ilac, Istanbul/Turkey) and patients in