A Cost-Effectiveness Analysis of Parecoxib in the Management of Postoperative Pain in the Greek Health Care Setting

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ABSTRACT

Background: Postoperative pain management represents a significant factor of morbidity and reduced quality of life for patients, as well as a situation that substantially increases perioperative costs. Available analgesia treatments improve patient outcomes and reduce resource use associated with pain management, although with varying costs and adverse effects.

Objectives: The aim of this analysis was to assess the costs and patient outcomes of parecoxib used in combination with opioids versus use of opioids alone (monotherapy) in the postoperative treatment of surgical patients in Greece.

Methods: A model comparing parecoxib plus opioid treatment versus opioids alone was developed that simulated the first 3 days postsurgery. Clinical efficacy was based on a Phase III, randomized, double-blind, clinical trial that also provided the frequencies of the occurrence of clinically meaningful events (CMEs) related to opioid use for both treatment arms. Resource use associated with each CME was elicited via strictly structured questionnaire-based interviews conducted by a panel of experts (surgeons and anesthesiologists), and costs were determined from the perspective of Social Insurance in Greece (2012 euros). Treatment effectiveness was calculated in summed pain intensity scores. A series of 1-way sensitivity analyses were conducted to check the robustness of the outcomes.

Results: Patients treated with parecoxib plus opioids had lower summed pain intensity scores (59.20 vs 80.80) and fewer CMEs (0.62 vs 1.04 per patient) compared with opioids alone for a 3-day period. This outcome led to a full offset of the excess cost of the addition of parecoxib and led to potential savings of €858 per patient compared with opioid use alone. Savings were mainly attributable to decreased CMEs due to reduced intensive care unit and general ward bed-days as well as to reduced physician and nurse time. Results were sensitive with regard to probabilities of occurrence or co-occurrence of CMEs (≥2 CMEs occurring simultaneously), although only to a small extent. Medication costs had a minimal impact on the results of the sensitivity analysis.

Conclusions: Parecoxib may be a useful addition to opioid treatment by improving postoperative analgesic management, reducing opioid-related adverse events, and lowering per-patient treatment costs. (*Clin Ther*. 2013;35:1118–1124)

Key words: analgesia, cost-effectiveness analysis, opioids, parecoxib, postoperative pain.

INTRODUCTION

Postoperative pain management represents a significant factor of morbidity and reduced quality of life for patients, as well as a situation that substantially increases perioperative costs.[1] Opioid analgesics are often used either as a stand-alone therapy or in combination with other agents to improve pain relief. However, despite the effectiveness of opioid drugs in postoperative pain management, there are limitations to their use, partly due to tolerance effects (eg, respiratory depression, nausea, vomiting), which render extended care for patients a necessity.[2]

Use of NSAIDs via parenteral administration is another established pharmacologic tool for reducing pain after surgery. However, the significant potential adverse effects of cyclooxygenase-1 inhibition, such as gastric ulceration and bleeding, have limited the use of nonspecific NSAIDs in many surgical patients.[3] In this

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context, selective cyclooxygenase-2 inhibitors, such as parecoxib, are indicated for the management of postsurgical pain, resulting in optimal pain management with decreased opioid use and fewer opioid-related adverse events.[4]

Parecoxib is a selective inhibitor of cyclooxygenase-2 that can block prostaglandin biosynthesis associated with inflammatory pain. Moreover, parecoxib lacks the potential adverse effects of cyclooxygenase-1 inhibition, including gastroduodenal ulceration and bleeding or impairment of platelet function.[5] Therefore, it is frequently used in multimodal pain therapy settings to reduce bleeding caused by other analgesic agents.

Although parecoxib is an effective pharmacologic agent in the clinical setting, very few economic or patient quality of life arguments for it have been developed to date. In view of the international need to supplement clinical effectiveness data with evidence of economic efficiency, cost-effectiveness analyses are essential factors in the health policy decision-making process. Thus, the objective of the current study was to perform a cost-effectiveness analysis of parecoxib and opioids versus opioids alone in the postoperative setting in Greece, using the perspective of Social Insurance.

METHODS

The current analysis was based on the development of a pharmacoeconomic model that calculated the clinical effects and associated costs after the use of parecoxib and opioids versus opioids alone for patients undergoing noncardiac surgery. The model was developed in the form of a decision tree that represented the treatment algorithm in the clinical setting for the aforementioned patients in a 3-day period postsurgery (day 1 defined as the day of surgery). An outline of the decision model is depicted in Figure 1.

Data on effectiveness for the medications under evaluation were derived from a randomized, double-blind, placebo-controlled, Phase III trial by Nussmeier et al.[6] The authors compared the use of parecoxib versus placebo in patients undergoing noncardiac surgery; both treatment groups also allowed use of standard opioid medications. Patients undergoing cardiac surgery were excluded because parecoxib and valdecoxib are not indicated for the management of postoperative pain in these patients. In addition to opioids, the parecoxib group received an initial parenteral dose of parecoxib 40 mg on the day of surgery, followed by parecoxib 20 mg every 12 hours for 3 days, followed by valdecoxib 20 mg every 12 hours through day 10; the placebo group received matching placebo throughout the 10-day period. Both patient groups had access to the standard regimen of intravenous opioids on-demand as supplemental analgesia, until switching to oral analgesics. Pain intensity was measured by using a 4-point scale (0 = none, 1 = mild, 2 = moderate, and 3 = severe). Patients

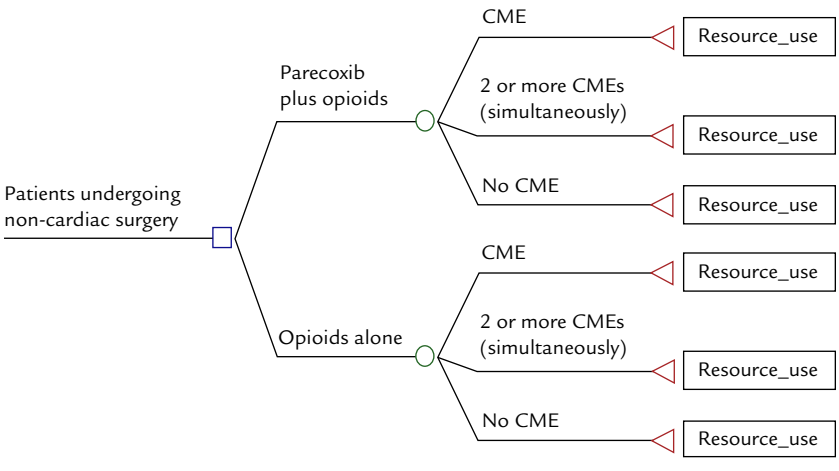

Figure 1. Overview of the study model. Clinically meaningful events (CMEs) include 1 of the following: fatigue, drowsiness, concentration problems, nausea, retching/vomiting, dizziness, constipation, itching, urination problems, and confusion. Summed pain intensity scores were expressed in mean daily intensity and are not graphically represented in the model outline.