An Oral Opioid Alternative for Acute Pain

Miner JR, Moore J, Gray RO, et al. Oral versus intravenous opioid dosing for the initial treatment of acute musculoskeletal pain in the emergency department. Acad Emerg Med 2008;15:1234–40.

Study Overview

Objective. To compare the analgesic effect of oral versus intravenous (IV) opioid treatment for musculoskeletal pain in patients presenting to the emergency department (ED).

Design. Prospective, single-center, randomized controlled trial.

Setting and participants. Patients aged > 6 years presenting to an urban county ED with musculoskeletal pain between 1 June 2006 and 31 December 2007. Consenting patients who were slated for IV morphine treatment but had not yet received an IV were randomized to IV morphine sulfate 0.1 mg/kg or oral oxycodone 0.125 mg/kg in a 5 mg/5mL solution as initial analgesia. Patients were excluded if they had received pain medication 30 minutes prior to enrollment, had an allergy to morphine or oxycodone, were pregnant or nursing, had renal or hepatic disease or ongoing obstructive airway disease, were in respiratory distress, or were clinically intoxicated. All medications received in the prior 6 hours to enrollment were recorded.

Main outcome measures. Time from placement of the medication order to medication administration was recorded. Pain and the need for rescue medications (ie, increasing pain or insufficient improvement of pain within 40 min of initial administration as determined by the treating physician) were measured at 0, 10, 20, 30, and 40 minutes after drug administration using the 100-mm visual analog scale.

Main results. Of 405 patients identified during the enrollment period, 328 consented to participate. After exclusions and withdrawals, 265 (65% eligible enrollees) were randomized to IV morphine sulfate (n = 125) or oral oxycodone (n = 140). Patient characteristics and analgesic medications received up to 6 hours prior to enrollment were similar between groups. Median time to receive IV morphine was longer than the time to receive oral oxycodone (20.5 min vs. 8.5 min, respectively). At 10 and 20 minutes after medication administration, the number of patients with a 50% reduction in pain scores was greater in the IV morphine group than in the oral oxycodone group; however, at 30 and 40 minutes there were no significant differences between the groups. There were more treatment failures at the 10-minute (7.2% vs. 2.8%; P = 0.01) and 20-minute (9.6% vs. 2.9%; P = 0.02) time points for the IV morphine group as compared with the oral oxycodone group. No significant adverse effects were observed in either group.

Conclusion. An oral loading strategy using oxycodone solution provides similar pain relief to IV morphine sulfate in terms of time to pain relief.

Commentary

The problem of inadequate pain control continues to exist in the ED setting [1]. Although a recent study indicated the use of opioid analgesia increased in EDs nationwide from 1993 to 2005 [2], other studies demonstrate that patients continue to experience delayed, inadequate, or no pain care in the ED setting [3–5]. Nonetheless, surveys of ED patients indicate that they expect complete relief of their pain [6], and the goal of ED pain care is relief of pain and suffering as soon as possible. However, barriers exist that may preclude adequate pain management from being achieved, including patient-related differences and current work demands on clinical staff, especially during periods of crowding when resources are constrained or limited. The nature of ED patient evaluation with multitasking and frequent interruptions can contribute to poorer pain management [7,8].

Having a feasible, quicker, and more easily administered alternative to morphine sulfate, a commonly used modality for weight-based IV opioid titration, would be ideal during ED patient evaluation. The results of this study by Miner et al demonstrate that use of an oral solution of oxycodone is not only faster in time to administration but also has peak effects comparable with IV morphine at 30 to 40 minutes after administration. Providing ED clinicians with the option of using an oral opioid solution for patients with moderate to severe musculoskeletal pain earlier in the ED evaluation would greatly benefit patients and caregivers. In the busy and often chaotic ED environment, improvements in pain care policies and practices with faster alternatives are greatly needed. By addressing pain earlier, clinicians may be able to reduce pain before it worsens significantly.

Although this study demonstrates the comparability of oral oxycodone with IV morphine, no conclusions can be drawn about other forms of opioid analgesia. Additionally,

as noted by the authors, many patients in this trial required rescue doses for pain relief (IV morphine significantly more often than oral oxycodone). As with previous studies of pain medication [9], it is likely that doses given during clinical trials are lower than those actually ordered in practice. Finally, the study was limited by its single institutional setting; implementation of these pain care practices may be difficult and not generalizable to other ED settings.

Applications for Clinical Practice

The use of oral opioid analgesics is a feasible alternative to IV opioid analgesics for acute pain treatment. This is a practical option for patients with limited or technically difficult IV placement or when considering the goal of quicker times to pain relief and easier administration of analgesia for moderate to severe pain.

—Review by Ula Hwang, MD, MPH

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