Buprenorphine Equals Morphine for Fracture Pain

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3 comment(s)

Buprenorphine is as effective as morphine in managing fracture pain in the emergency department, according to the results of a double-blind, double-dummy randomized controlled trial.

Pain scores were similar between those who received buprenorphine and those who received morphine, both at 30 minutes (5.0 versus 5.0, difference 0; 95% CI -0.6 to 0.8, *P*=1.0) and at 60 minutes (2.2 versus 2.2, difference 0; 95% CI -0.3 to 0.3, *P*=0.9), reported Mohammad Jalili, MD, from the Imam Hospital in Tehran, and colleagues.

Action Points

This study suggests that sublingual buprenorphine is as effective as intravenous morphine for pain relief in adult patients presenting to the emergency department with fractures, with no serious or persistent adverse effects noted with either drug.

Sublingual dosing allows for easier and quicker administration, and thus buprenorphine may be a useful alternative to intravenous morphine for acute fracture pain management in the emergency department.

Adverse effects seen within the first 30 minutes following administration were nausea (14% for those receiving buprenorphine versus 12% for those receiving morphine, *P*=0.73), dizziness (14% versus 22%, *P*=0.32), and hypotension (4% versus 18%, *P*=0.02), the authors wrote online in the *Annals of Emergency Medicine*.

Undertreatment of pain is still a common problem in many emergency departments (EDs), the investigators noted. Although morphine is often used for acute pain in the emergency department, its use must be closely monitored "because of potential adverse effects such as respiratory depression, central nervous system depression, hypotension, and gastrointestinal problems."

Buprenorphine, an agonist-antagonist of opioid receptors, has an analgesic potency 25 to 40 times greater than that of morphine, they continued. "It has been successfully used for opioid detoxification, cancer-related pain, and postoperative pain control, with a high clinical safety profile and a more prolonged duration of action."

However, buprenorphine is not routinely used in emergency departments and hasn't been studied for such use, the authors wrote.

To increase knowledge in this area, the researchers enrolled a convenience sample of 110 patients admitted to Imam Hospital from February 28, 2010 to March 1, 2011. They included patients 16 years or older, with acute extremity fracture(s) and pain numeric rating score higher than 3 on a scale of 0 to 10.

Subjects were randomly assigned to receive either 0.4 mg of sublingual buprenorphine tablets plus 5 mL of sterile water as placebo or 5 mg of intravenous morphine sulfate plus a sublingual placebo. Pain ratings were obtained at baseline and again 30 and 60 minutes after administration of the analgesic.

Patients were monitored continuously with pulse oximetry and vital signs were assessed every 15 minutes. Naloxone was immediately available, but none of the subjects required its use.

At 60 minutes, the researchers found no reported adverse effects among those taking buprenorphine compared to 2% reporting nausea (*P*=1.00), 4% complaining of dizziness (*P*=0.49), and 2% with hypotension (*P*=1.00) among those taking morphine. There were no instances of decreased level of consciousness, respiratory depression, oxygen desaturation, seizure, or vomiting in either group.

The authors noted several limitations to their study. It was conducted only with patients who could

actively participate in their pain scoring. They lost those who were intoxicated and those with other distracting injuries, as well as patients who had accompanying trauma or whose status was under investigation for other reasons. They also used a fixed dose in each patient rather than making body-weight dose adjustments.

Since the study was limited to only one pain group (those with fractures), generalizing these results to other type of pain is problematic, the authors noted.

"Our study showed that sublingual buprenorphine can decrease fracture pain in ED patients as effectively as intravenous morphine, and with a similar safety profile," they concluded. "Because sublingual dosing allows for easier and quicker administration, buprenorphine appears to be a promising alternative to intravenous morphine for acute pain management."

The study was part of a thesis supported by Tehran University of Medical Sciences. The authors reported no conflicts of interest.

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