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May 19, 2017

Carpenter, Washington University in St Louis School of Medicine (2017). In Patients in the Emergency Department with Acute Pain, 10, 15, and 30 mg Ketorolac Did Not Differ for Pain Relief. *Annals of Internal Medicine*, 166(8) JC 44.

Clinical Question:

In patients presenting to the emergency department with acute pain, does increased dosage of ketorolac show improved outcome for treatment of pain?

Introduction:

Ketorolac is a very common medication used in the emergency department as a non-opiate strategy for treating acute pain. As with all NSAIDs there are significant side effects associated with this medication. Side effects of this medication include gastritis, acute kidney injury, and upper GI bleed. The side effects of ketorolac are known to be dosage dependent, with higher dosages being associated with increased risk of side effects.

Methods:

This study was conducted at a community teaching hospital in Brooklyn, New York. Study was randomized, double-blinded. A total of 240 patients were involved in the study. Study involved patients from 18-65 years of age who had acute pain (<30 days) >5 in intensity. Exclusion criteria included history of peptic ulcer disease, history of renal insufficiency, and history of GI bleed. Treatment arms were given 10 mg, 15 mg, or 30 mg of ketorolac intravenously. Primary outcome was pain scale at 30 minutes. Secondary outcome was pain scale at 120 minutes.

Results:

Mean pain scores for the three treatment groups were 7.7, 7.5, and 7.8. There was no significant difference in the pain scale between the different dosages of ketorolac. There was also no significant difference in the reported side effects between the groups (headache, nausea, itchiness). Reported pain improved over time, pain reported at 120 minutes was improved versus 30 minutes at all 3 dosage levels.

Discussion:

Treatment of pain in the emergency department is a cornerstone of our practice. With increasing societal problems of addiction and opiate abuse, it is necessary to try to limit our use of opiates in treating pain. Ketorolac is one tool that can be used in emergency medicine to treat pain, but as with all NSAIDs there are significant side effects. In patients where NSAIDs are an appropriate choice, what is the best dosage to use? This study is useful in that it shows no benefit between increasing dosage, and it is likely that at lower dosages the side effect profile of these medications is safer for the patient. The two limitations on this study are that there was no placebo group and no oral group. Further studies should look at how oral route compares with parenteral route, and also how the placebo effect would affect the results.
