Intravenous NSAID's in the management of renal colic

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Guy's and St Thomas' and MRI
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Abstract

A short cut review was carried out to establish whether intravenous non-steroidal anti-inflammatory drugs are better than opioids at reducing pain in renal colic. 230 papers were found, of which five presented the best evidence to answer the clinical question, these have been meta-analysed by the Cochrane collaboration. The results of the meta-analysis are presented here. The author, date and country of publication, patient group studied, study type, relevant outcomes, results, and study weaknesses of these best papers are tabulated. The clinical bottom line is that intravenous NSAID's should be the first-line treatment for patients presenting to the ED with acute renal colic.

Three part question

[In patients presenting with suspected renal colic to the ED] [is the administration of an intravenous non-steroidal anti-inflammatory drug better than intravenous opioids]at [providing adequate analgesia]?

Clinical scenario

You are called to see a middle aged man with an acute onset of severe, colicky, left-sided loin pain. Clinical examination rules out peritonitis while urinalysis reveals '+ + +' microscopic haematuria. You strongly suspect a diagnosis of ureteric stone disease.

In such circumstances, impacted renal calculi trigger the production of prostaglandins which subsequently stimulate pain. While opiates can offer pain relief by subduing patients' awareness of these stimuli, NSAID's can actually treat the pathophysiological mechanisms that cause them in the first place. You wonder whether they would be more effective at providing analgesia?

Search strategy

Medline database using Ovid interface: 1966–November 2005.

The Cochrane Database of Systematic Reviews was also searched.

Search details

Medline: {{{(exp Injections, Intravenous/or intravenous. mp.) AND {(exp Analgesics/or analgesics. mp.) OR (exp Analgesia/or analgesia. mp.)}} AND {(exp Cyclooxygenase Inhibitors/or exp Anti-Inflammatory Agents, non-Steroidal/ or exp Anti-Inflammatory Agents/or non-steroidal anti-inflammatory drugs. mp.) OR (exp Analgesics, Opioid/or opioid analgesics. mp.)}} AND {(exp Ureter/or exp. Kidney Diseases/or exp. Kidney Calculi/or renal colic. mp. or exp. Ureteral Calculi/or exp. Urinary Calculi/) OR (Ureteral diseases/or ureteric colic. mp.)}} LIMIT to human and English Language.

Cochrane: NSAIDS and renal colic.

Search outcome

230 papers were found of which 225 were irrelevant, of insufficient quality, or concerned drugs that are not licensed for use in the USA and UK—for example, Dipyrone. All five remaining papers had been meta-analysed by the Cochrane Collaboration

Comments

In terms of analgesia, the critical phase in the treatment of acute renal colic is the first 20–30 minutes after admission. While studies 1–4 show no significant advantage in using opiates over NSAID's during this period, Study 5 (Cordell *et al*, 1996) clearly demonstrates a statistically significant advantage in favour of NSAID's ($p = 0.04$). This becomes even more significant on an intention-to-treat basis ($p < 0.001$), which of course is the most likely scenario to be encountered in the ED, where the diagnosis will not have been confirmed prior to treatment. Beyond the first 20–30 min, Studies 1, 2, 3, and 5 also show that a considerable number of patients in both groups require additional analgesia, but in studies 1, 2, and 5, a greater proportion of opiate patients require it in comparison to NSAID patients ($p = 0.04$ in Study 5). Study 5 further demonstrates that patients receiving opiates require additional analgesia at earlier times and in greater doses than patients receiving NSAID's ($p = 0.004$ and $p < 0.001$, respectively). In terms of adverse effects, Studies 1, 2, 3, and 5 do show that they are more frequently associated with opiates, but not with statistical significance.

► CLINICAL BOTTOM LINE

Intravenous NSAID's should be the first-line treatment for patients presenting to the ED with acute renal colic.

Holdgate A, Pollock T. Nonsteroidal anti-inflammatory drugs (NSAIDs) versus opioids for acute renal colic. *The Cochrane Database of Systematic Reviews* 2004, Issue 1. Art. No.: CD004137.pub3. DOI: 10.1.