TITLE: Ketorolac versus Other Non-Steroidal Anti-Inflammatory Drugs for the Management of Acute Pain: Comparative Clinical Effectiveness

DATE: 16 January 2017

RESEARCH QUESTION

What is the comparative clinical effectiveness of ketorolac versus any other non-steroidal anti-inflammatory drug for the management of acute pain?

KEY FINDINGS

Four randomized controlled trials were identified regarding the comparative clinical effectiveness of ketorolac versus any other non-steroidal anti-inflammatory drug for the management of acute pain.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. To Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2012 and December 20, 2016. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.
Table 1: Selection Criteria

<table>
<thead>
<tr>
<th>Population</th>
<th>Any patient with acute pain</th>
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<tbody>
<tr>
<td>Intervention</td>
<td>Ketorolac (Toradol)</td>
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<tr>
<td>Comparator</td>
<td>Non-steroidal anti-inflammatory drugs (e.g., ibuprofen, naproxen, etc.); Excluding aspirin and celecoxib</td>
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<tr>
<td>Outcomes</td>
<td>Clinical effectiveness, pain management, adverse events</td>
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<tr>
<td>Study Designs</td>
<td>Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies</td>
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</table>

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, and non-randomized studies.

Four randomized controlled trials were identified regarding the comparative clinical effectiveness of ketorolac versus any other non-steroidal anti-inflammatory drug for the management of acute pain. No relevant health technology assessments, systematic reviews, meta-analyses, or non-randomized studies were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

Four randomized controlled trials \(^1\text{-}^4\) (RCTs) were identified comparing the effectiveness of ketorolac to other non-steroidal anti-inflammatory drugs. For the management of acute low back pain, one RCT\(^1\) determined that sublingual ketorolac was non-inferior to naproxen for the reduction of pain over five days. A higher percentage of patients in the ketorolac group reported improved pain relief within the first 60 minutes after the initial dose. Adverse events included heartburn, nausea, and vomiting.\(^1\)

Two RCTs\(^2\text{-}^4\) compared intravenous (IV) ketorolac with injectable diclofenac and placebo for the management of post-operative pain. In one RCT,\(^2\) acute pain was managed within six hours following orthopedic surgery.\(^2\) Mean pain scores were significantly improved in the ketorolac and diclofenac groups when compared with placebo. Significantly better pain scale scores, a lower opioid requirement, and faster onset of pain relief were observed in the diclofenac group as compared to the ketorolac group.\(^2\) A second RCT\(^4\) compared IV ketorolac with injectable diclofenac and placebo for the management of acute pain following abdominal or pelvic surgery. Both the ketorolac and diclofenac groups reported a significant reduction in pain and requirements for additional morphine when compared with placebo. One serious treatment-related adverse event was reported in the ketorolac group.\(^4\)

One RCT\(^3\) compared the effectiveness of intramuscular ketorolac with diclofenac for the management of pain associated with acute renal colic in the emergency department. A significant difference in pain scores between groups was reported only at 15 minutes following treatment and favored the ketorolac group. There was no significant difference in pain relief between groups at any other time point. No significant differences in adverse events were observed between groups.\(^3\)
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses
No literature identified.

Randomized Controlled Trials


Non-Randomized Studies
No literature identified.

PREPARED BY:
Canadian Agency for Drugs and Technologies in Health
Tel: 1-866-898-8439
www.cadth.ca
APPENDIX – FURTHER INFORMATION:

Previous CADTH Reports


Systematic Reviews – Comparison to Other NSAIDs Not Specified in Abstract


Randomized Controlled Trials – Different Doses of Ketorolac


Evidence-Based Guidelines

   See: Nonopioid Analgesia

Review Articles