Do opiates affect the clinical evaluation of patients with acute abdominal pain?

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CRD summary
The review evaluated the impact of opiate analgesics on the rational clinical examination and operative decision for patients with acute abdominal pain. The authors concluded that the administration may alter physical examination findings but these changes result in no significant increase in management errors. Owing to limitations of the review, mainly concerning the reporting, the conclusions have to be regarded with some caution.

Authors' objectives
To evaluate the impact of opiate analgesics on the rational clinical examination and operative decision for patients with acute abdominal pain. The review addressed this objective as three separate questions.

Does the administration of opiates alter the history given by patients with acute abdominal pain?

Does the administration of opiates alter the physical examination of patients with acute abdominal pain?

Does the administration of opiates result in error in the clinical management of patients with acute abdominal pain?

Searching
The reviewers searched MEDLINE and EMBASE (to May 2006) and screened the bibliographies of included studies. The search terms were reported.

Study selection
Study designs of evaluations included in the review
Placebo-controlled trials with random or quasi-random (e.g. alternating patients) treatment assignment were eligible.

Specific interventions included in the review
Studies of opiate analgesia compared with placebo were eligible for inclusion. The included studies used buprenorphine, papaveretum, morphine sulphate, fentanyl, tramadol or oxycodone; administration was sublingual, buccal, intramuscular or intravenous. Where reported, the examiners in the clinical evaluations were surgical residents, emergency medicine (EM) physicians, EM residents, EM physician and surgical residents, 'paediatric EM', or surgeon.

Participants included in the review
Studies in participants with acute abdominal pain were eligible for inclusion. The included studies were in adult, adolescent and paediatric samples. Most studies enrolled patients with undifferentiated acute abdominal pain; a few included only patients with right lower quadrant pain. The final diagnoses in the included studies comprised a variety of conditions such as appendicitis, bowel obstruction or pancreatitis. Most studies excluded several patient groups, for example those with suspected abdominal aortic aneurysm or severe pain.

Outcomes assessed in the review
Studies that provided data on changes in the patient history assessment, physical examination or clinical management of patients were eligible for inclusion. The review addressed incidences of all changes in the history and physical examination of the abdomen, including changes in the presence of peritoneal signs, blinding of examiners as a substitute outcome for effects on patient history, and incidences of management errors in terms of delayed or unnecessary surgeries.

How were decisions on the relevance of primary studies made?
Two reviewers independently reviewed the studies; a third reviewer resolved any discrepancies.
Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Two reviewers independently abstracted the data; a third reviewer resolved any discrepancies. This process involved the construction of 2x2 tables from the raw data, and the calculation of risk ratios for history or physical examination changes and risk differences for management accuracy.

Methods of synthesis
How were the studies combined?
A random-effects model was used to compute pooled relative risks (RR), risk differences and confidence intervals (CIs).

How were differences between studies investigated?
The review calculated the I-square statistic to assess statistical heterogeneity within the topics physical examination and potential management errors.

Results of the review
Twelve trials reporting a total of 15 comparisons (n approximately 1,353, exact number unclear) were included.

Patient history.
No study explicitly evaluated the effect of opiate administration on patient history. Five studies let examiners guess whether the patient had received opiate or placebo. In all cases blinding was deemed adequate which provided, according to the review authors, some indication that administering opiates does not substantially alter patient history assessments.

Physical examination.
Nine trials in adults showed a trend toward increased risk of altered findings on the examination due to opiate administration, with risk ratios for changes in the examination of 1.51 (95% CI: 0.85, 2.69). Two trials in children also showed this trend (RR 2.11, 95% CI: 0.60, 7.35). There was evidence of statistically significant heterogeneity (I-squared 62.1%, P=0.003).

Management errors.
Opiate administration showed no significant association with management errors. Four adult studies showed an absolute change in risk of incorrect management decisions with opiates of +0.3% (95% CI: -4.1, +4.7); three paediatric studies showed a pooled value of -0.8 (95% CI: -8.6, +6.9). There was no indication of significant statistical heterogeneity.

Authors' conclusions
The administration of opiates may alter physical examination findings, but these changes do not result in any significant increase in management errors.

CRD commentary
The review addressed a difficult review question, and the eligible indications of change in the patient history assessment, physical examination or clinical management of the patients could have been defined better. The search was limited and relevant published or unpublished studies might have been missed. Measures were taken throughout the review process to reduce errors and bias in the selection of studies and extraction of data. The quality of the included studies was not assessed and remains unclear. Given the complex nature of the review questions, and the difficulty of defining a relevant outcome and how this can be quantified, only limited information on the included studies was
presented in the publication. Overall, the conclusions have to be regarded with some caution.

**Implications of the review for practice and research**

Practice: The authors stated that clinicians should administer analgesia unless further research documents adverse events to patients that are directly attributable to opiates.

Research: The authors stated that studies should clearly define and measure beneficial and harmful changes (both accuracy and delays) in the history, physical examination or management of patients. In addition, researchers should attempt to define the patient population in which physical examination changes are likely to influence management, as well as consider whether opiates affect the need for computed tomography scanning and if analgesia might improve or worsen the accuracy of imaging studies.

**Bibliographic details**

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**Other publications of related interest**

This additional published commentary may also be of interest. Edmonds M. Review: opiate administration may alter physical examination findings but does not increase management errors in acute abdominal pain. Evid Based Med 2007;12:23.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.