A review of evidence about factors affecting quality of pain management in sickle cell disease

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Authors' objectives
To assess the evidence for pharmacological, behavioural and interpersonal influences on quality of pain management in sickle-cell disease.

Searching
MEDLINE, PsycLIT and BIDS were searched for English language publications up to 1995.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials of varying quality, before-and-after studies, prospective and retrospective comparisons, were included.

Specific interventions included in the review
Analgesics: subcutaneous, intramuscular and intravenous opiates, including meperidine (pethidine) and synthetic opiates.

Other drugs: corticosteroids, non-steroidal anti-inflammatory drugs (NSAIDs); tricyclic antidepressants or hydroxyzine in conjunction with opiates; drugs with potential antisickling properties (cetiedil and pentoxifyllin).

Non-pharmacological pain management: self-hypnosis, biofeedback, acupuncture and transcutaneous nerve stimulation (TENS).

Participants included in the review
 Patients suffering pain due to sickle-cell disease; some studies are of children, some of adults, and others include mixed age-groups.

Outcomes assessed in the review
Patient or clinician rated pain relief, duration of pain, analgesic use, number of painful sites, number of emergency department visits and/or hospital admissions, in-patient days, adverse effects.

How were decisions on the relevance of primary studies made?
Studies were reviewed that (1) reported quantitative clinical outcomes for particular analgesic methods used to treat painful episodes, or (2) provided data on patient factors, interpersonal treatment factors, or levels of drug dependence in relation to pain management in sickle cell disease.

Assessment of study quality
The authors do not state that they assessed validity.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the authors performed the data extraction.

Methods of synthesis
How were the studies combined?
The studies were combined narratively.

How were differences between studies investigated?
The authors do not state how differences between the studies were investigated.

Results of the review
Twenty-four studies are listed on outcomes for particular analgesic methods, one of which appears twice in the table; approximately 715 patients were included (precise figure unclear).

Findings vary on the effectiveness of longer-acting opiates, patient-controlled or continuously infused analgesics, and behavioural analgesic techniques. Most studies show no statistically-significant difference between pharmacological treatments in pain relief. Where differences are reported, there appear to be inconsistencies, e.g. shorter painful episodes, fewer painful sites, and better overall treatment evaluation associated with no change in analgesic use (cetiedil, pentoxiphyllin).

The most positive results reported were for medications given in addition to primary analgesics, where NSAIDs and antisickling agents were found to reduce opiate requirements or the duration of painful episodes. The evidence on patient-controlled analgesia is less conclusive.

All types of non-pharmacological analgesic methods investigated appeared to be effective by some measures used. However, there were inconsistencies in results, e.g. patients were more likely to find TENS 'helpful' than the sham procedure, but this was not associated with significantly reduced patient-rated pain or analgesic use.

Increased information and education for both patients and staff reduced emergency visits and in-patient days.

Authors' conclusions
The results of studies of patient-controlled analgesia and continuous administration of opiates are mixed but encouraging, and there are generally positive findings for conjunctive administration of NSAIDs. The evidence on non-pharmacological analgesics is largely disappointing, with positive results in the least well-controlled studies.

CRD commentary
This review is less useful than it might be. The authors have not attempted to rate or order the studies in terms of methodology or reliability. Most of the studies reviewed are very small and many are also poorly controlled. This means that interpretation of this rather diverse collection is difficult. Whilst no significant differences are reported in the majority of studies, between interventions in terms of pain or analgesic use, these studies are too small to allow judgements about relative effectiveness of treatments. Statistics which might give more information are not reported when statistical significance is not achieved. Clarity is further reduced by the fact that the authors' conclusions do not clearly reflect the results of studies summarised in the table.

Implications of the review for practice and research
Research on pain management in sickle-cell disease appears to be of poor quality. Interventions need to be evaluated in studies with sufficient power to reflect treatment differences.

Bibliographic details

PubMedID
8866159
Indexing Status
Subject indexing assigned by NLM

MeSH
Anemia, Sickle Cell /physiopathology; Humans; Pain /physiopathology; Pain Measurement

AccessionNumber
11996001466

Date bibliographic record published
31/05/1997

Date abstract record published
31/05/1997

Record Status
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.