Comparative efficacy of epidural, subarachnoid and intracerebroventricular opioids in patients with pain due to cancer

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Authors' objectives
To compare the effectiveness of intracerebroventricular opioid therapy with epidural and subarachnoid opioid treatments in the control of intractable pain due to cancer.

Searching

Study selection
Study designs of evaluations included in the review
Uncontrolled trials were included.

Specific interventions included in the review
Comparisons of intracerebroventricular opioid therapy (ICV) with epidural (EPI) and subarachnoid opioid treatments (SA).

Participants included in the review
Patients with intractable cancer pain were included.

Outcomes assessed in the review
The outcomes assessed were analgesic efficacy (pain relief), side-effects (either transient or protracted) and complications (minor infection, major infection or others).

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
The authors do not report the method used to assess quality, or how the quality assessment was performed.

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?
To assess analgesic efficacy, the DerSimonian and Laird method was used to provide a combined estimate of the percentage of patients receiving excellent pain relief from a treatment, along with a standard error of the estimate. To
estimate the frequency of various side-effects and complications among each of the treatments, the treatment-specific incidence of each side-effect or complication was added and then divided by the sum of the sample size. To explore differences between treatments, the difference was computed between the side-effects percents for the pair of treatments, along with the standard error of the difference. This gives an indication of the significance of the differences between two treatments.

How were differences between studies investigated?
For the analgesic analyses the studies that quantified efficacy (in terms of pain relief) were analysed separately. A chi-squared test was carried out for each combined estimate in the assessment of analgesic efficacy.

**Results of the review**
ICV, 13 trials with 268 patients; EPI, 29 trials with 909 patients; and SA, 21 trials with 410 patients.

Pain relief was judged as excellent in 75% (SE 3.8) of patients receiving ICV compared with 72% (SE 6.5) in the EPI group and 58% (SE 7.9) in the SA group (p=0.07). Persistent nausea, persistent and transient urinary retention and persistent and transient pruritus all occurred more frequently with EPI than with ICV. Only transient nausea and respiratory depression occurred more frequently with ICV than with EPI. Persistent nausea, transient and persistent urinary retention and transient and persistent pruritus occurred more frequently with SA than with ICV. There were no real differences in infectious complication rates among the three treatments, except for when an implanted pump was used. Technical problems such as catheter blockage, misplacement or leakage tended to occur less often with ICV.

**Authors’ conclusions**
ICV appears to be at least as effective against pain as other neuraxial treatments. The ICV technique is the only fixed system that is associated with fewer technical problems than the use of simple percutaneous epidural catheters. The present state of evidence indicates that ICV is a successful treatment for patients with intractable cancer pain and compares well with spinal opioid treatments in terms of efficacy, side-effects and complications. However, more rigorous reporting of efficacy and complications is needed before it will be clear whether or not ICV should be pursued as a first-line neuraxial treatment.

**CRD commentary**
This is a clearly-presented review. However, the searches were limited to electronic databases, although database coverage was extensive. No information is given about how decisions relating to inclusion were made or about the quality assessment of those studies included in the review. More detailed information about the participants included in each study would have been useful. The analyses were based on data from uncontrolled trials, which the authors acknowledge as being weak evidence, thus the findings should be treated with some caution.

**Bibliographic details**

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**Other publications of related interest**

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Subject indexing assigned by NLM

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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.