Efficacy and tolerability of oxycodone in moderate-severe cancer-related pain: a meta-analysis of randomized controlled trials

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CRD summary
The authors concluded that oxycodone was superior to other strong opioids including morphine sulphate, codeine and tramadol, supporting its use as an opioid for cancer-related pain in China. This was a well-conducted review and the results are likely reliable.

Authors’ objectives
To evaluate the efficacy and tolerability of oxycodone in moderate-severe cancer-related pain in China.

Searching
PubMed, EMBASE, The Cochrane Library and CBM databases were searched to August 2011 without language restrictions; search terms were reported. A manual search of references from major textbooks, reviews and included articles was undertaken.

Study selection
Randomised controlled trials (RCTs) conducted in China and that evaluated the efficacy and tolerability of oxycodone in patients with moderate-severe cancer-related pain were eligible for inclusion. All routes of drug administration and all formulations of oxycodone were eligible for inclusion. The studies had to report sufficient data (incomplete raw data were excluded); it also appeared that the review authors attempted to contact study authors where there was insufficient data. Studies had to report genotype data for extraction. Combinations of oxycodone preparations (oxycodone and acetaminophen) were excluded from the review.

Where reported, the included trials included both men and women; men comprised 47% to 70% of study participants. Mean age of patients ranged from 46 to 60 years across the trial arms. Comparators included dihydrocodeine, morphine sulphate or tramadol. Three of the trials were conducted in northern China and four were conducted in southern China.

The authors did not state how many reviewers selected studies for inclusion.

Assessment of study quality
Study quality was assessed using the five-point Jadad scale. Summary quality grades were also defined as Grade A (results were valid without marked major bias), Grade B (study susceptible to some bias that was unlikely to invalidate the results) and Grade C (significant bias that may have invalidated the results).

Two reviewers independently assessed study quality. Any disagreements were resolved by discussion with a third reviewer.

Data extraction
Data on pain relief rates were extracted from each study to calculate odds ratios (OR) with 95% confidence intervals (CI). For the outcome of pain intensity score, standardised mean differences (SMD) with 95% CIs were calculated.

Two reviewers independently extracted data. Any disagreements were resolved by discussion with a third reviewer.

Methods of synthesis
Studies were pooled using a random-effects model where there was heterogeneity between studies (p<0.10 and I²>50%) or the fixed-effect model. Heterogeneity was assessed using Cochran’s Q and I². Publication bias was evaluated using Begg’s funnel plot and Egger’s test.

Results of the review
Seven studies were included in the review (613 patients). Two of the trials had a quality score of two (Grade C), four had a quality score of three (Grade B), and one had a quality score of four (Grade A).

Patients treated with oxycodone had significantly lower pain intensity scores (weighted mean difference -1.30, 95% CI -1.55 to -1.05; four studies; I²=99%) and improved pain relief rate on the obvious effective rate (OR 2.03, 95% CI 1.40 to 2.95; seven studies; I²=0%) and overall effective rate (OR 1.94, 95% CI 1.09 to 3.44; seven studies; I²=0%) compared to other strong opioids.

Compared with other strong opioids, there was significantly less nausea (OR 0.52, 95% CI 0.32 to 0.85) and constipation (OR 0.55, 95% CI 0.35 to 0.87) with the use of oxycodone. There were no differences between oxycodone and other strong opioids for dizziness, vomiting, sleepiness, pruritus, anorexia and dysuria.

No evidence of publication bias was found.

Authors' conclusions
In terms of efficacy and tolerability, oxycodone was superior to other strong opioids including morphine sulphate, codeine and tramadol, supporting its use as an opioid for cancer-related pain in China.

CRD commentary
The review question and inclusion criteria were clear. The search was well-conducted and there did not appear to be any publication bias (although a funnel plot with fewer than 10 studies is not very meaningful). With the possible exception of selecting relevant studies, steps were taken throughout the review to minimise reviewer error and bias. A quality assessment was undertaken and the results of this assessment were presented. The results were appropriately analysed in a meta-analysis. Heterogeneity was assessed.

This was a well-conducted review and the results are likely reliable.

Implications of the review for practice and research
Practice: The authors stated that the results of the systematic review supported oxycodone use for cancer-related pain in China.

Research: The authors stated that the results should be further confirmed by large case-control studies with adequate methodological quality and proper adjustment for possible confounding factors.

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