Oral erythromycin and symptomatic relief of gastroparesis: a systematic review

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CRD summary
This review concluded that there is insufficient data from clinical trials to assess the efficacy of erythromycin for symptom relief in gastroparesis. The conclusions follow from the evidence presented but should be treated with caution because the search was limited and the number of studies and patients involved was small.

Authors' objectives
To review clinical trials of erythromycin to determine its efficacy in producing symptom relief in patients with gastroparesis.

Searching
MEDLINE was searched from 1966 to 2001 for publications in the English language, using the search terms 'erythromycin', 'macrolides', 'diabetes', 'gastroparesis' and 'gastric emptying'. The reference lists of retrieved articles were checked for additional relevant studies.

Study selection
Study designs of evaluations included in the review
The inclusion criteria specified all clinical trials. Three studies were open-label studies, one study was an open-label, crossover design comparing erythromycin with metaclopromide, and one study was a double-blind placebo-controlled crossover study. In all studies, the study size was 13 or fewer patients and the duration of treatment was 4 weeks or less.

Specific interventions included in the review
The inclusion criteria specified interventions using erythromycin. One study compared erythromycin and metoclopramide (10 mg three times daily). One study was placebo-controlled. The doses of erythromycin ranged from 150 mg three times daily to a single dose of 500 mg daily.

Participants included in the review
The inclusion criteria specified patients with gastroparesis. The included participants were treated for progressive systemic sclerosis (1 study), diabetes or idiopathic gastroparesis (3 studies), and surgery (1 study).

Outcomes assessed in the review
The inclusion criteria specified symptom assessment. Symptom improvement was defined as a 25% or greater decrease in the total symptom scores. The symptoms mentioned in the review included nausea, vomiting, early satiety and bloating. None of the included studies used symptom improvement as the primary end point. The included end points were individual symptom scores and symptom improvement.

How were decisions on the relevance of primary studies made?
Two authors independently selected papers for the review. Any discrepancies were resolved by consensus opinion.

Assessment of study quality
The authors used a scoring system of 0 to 5 points (adapted from Jadad) for assessing the validity of the included studies. The authors did not state how the papers were assessed for validity, or how many reviewers performed the validity assessment. However, any discrepancies in the process were resolved by consensus.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data
Methods of synthesis
How were the studies combined?
The study results were summed with no further statistical analysis and were discussed in a narrative overview.

How were differences between studies investigated?
The authors did not state a method for assessing any differences between the studies.

Results of the review
Five clinical trials were included in the review. The number of participants listed in the data extraction table was 56, reflecting a drop-out of 4 participants from one of the studies. The authors have adjusted the reported figures to show an intention-to-treat analysis rather than the review’s per protocol approach. Three studies evaluated patients with diabetic or idiopathic gastroparesis and one study each involved gastroparesis caused by surgery and systemic sclerosis.

All of the included studies were methodologically weak and highly subject to bias (Jadad scores of 0, 1 and 2).

An improvement was reported in 26 (43%) of the 60 participants, whereas individual symptom scores were reported in only 23 participants. Symptom improvement was reported in 11 (48%) of these 23 participants.

Authors’ conclusions
Limited data exist concerning the efficacy of erythromycin in treating gastroparesis. The available studies were limited by small sample sizes, uncontrolled designs, short duration and inadequate symptom assessment. The true efficacy of erythromycin in relieving symptoms of nausea, vomiting, early satiety and bloating remains to be determined.

CRD commentary
The research question was clearly stated, as were the inclusion and exclusion criteria. The literature search was limited in that it did not search more than one database. Thus, it is possible that additional studies were missed. The review process could have been clearer in reporting who performed the data extraction and assessed the validity of the included studies. There was no meta-analysis, which appears to have been appropriate given the differences in treatments and study designs of the included studies. The conclusions appear to follow from the results presented, however, since the number of studies and participants is very small these results should be viewed with caution.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that well-designed trials designed to assess symptom relief in gastroparesis are needed.

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