Indications for treatment of Helicobacter pylori infection: a systematic overview

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Authors' objectives
To determine (1) the advantages and disadvantages of treatment options for the eradication of Helicobacter pylori, and (2) whether eradication of H. pylori is indicated in patients with duodenal ulcer, nonulcer dyspepsia and gastric cancer.

Searching
MEDLINE was searched from January 1983 to December 1992 for articles published in English, using the MeSH terms 'Helicobacter pylori' (called Campylobacter pylori before 1990) and 'duodenal ulcer', 'gastric cancer', 'dyspepsia' and 'clinical trial'. Six journals and Current Contents were handsearched for relevant articles in the same time frame.

Study selection
Study designs of evaluations included in the review
For duodenal ulcers: randomised controlled trials (RCTs) involving adults over the age of 17, comparing anti-H. pylori therapy with conventional ulcer treatment, and studies using eradication of H. pylori as an outcome measure.

For nonulcer dyspepsia with H. pylori infection: placebo-controlled RCTs involving adults, and clearance or eradication of H. pylori as outcome measures. The follow-up period was short, varying between 4 and 8 weeks.

Specific interventions included in the review
Cimetidine, tinidazole, colloidal bismuth subcitrate, amoxicillin, metronidazole, ranitidine, bismuth subsalicylate, omeprazole, and tetracycline.

Participants included in the review
Adult patients with H. pylori infection and with duodenal ulcers, nonulcer dyspepsia and gastric cancer.

Outcomes assessed in the review
For studies of duodenal ulcer, the outcome measures were acute ulcer healing and time required for healing, H. pylori eradication and ulcer relapse. For nonulcer dyspepsia studies, the outcomes were H. pylori eradication, the symptoms used, and whether validated outcome measures were used.

How were decisions on the relevance of primary studies made?
The studies were assessed independently by both authors on a 4-point scale for quality.

Assessment of study quality
The quality of the studies, as well as the primary outcome measures, were assessed independently by the two authors on a 4-point scale: +++ for a high-quality study (methodologically strong without important weaknesses), ++ for one of reasonable quality (some weaknesses in study design or results), + for a weak study (definite shortcomings in design or results) and 0 for a poor study (serious weaknesses). Consensus on quality scores and on data presentation was reached by discussion. The quality of studies was assessed independently by the two authors on a 4-point scale. A consensus on quality scores of studies was reached by discussion.

Data extraction
The data were extracted independently by the two authors.

Methods of synthesis
How were the studies combined?
The data were not pooled for statistical analysis since the treatment regimens, duration of treatment, frequency of repeat endoscopies and length of follow-up varied considerably among the studies.

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

Results of the review
Eight trials involving duodenal ulcer (799 patients in total), and 6 trials involving nonulcer dyspepsia (342 patients in total) met the criteria.

Among treatment options, triple therapy with a bismuth compound, metronidazole and either amoxicillin or tetracycline achieved the highest eradication rates (73 to 94%). For duodenal ulcer, treatment indications were consistent amongst all of the studies in that when using anti-H. pylori therapy, compared with conventional ulcer treatment, acute ulcers healed more rapidly; ulcer relapse rates were dramatically reduced after H. pylori eradication. With adequate compliance, triple therapy results in ulcer relapse rates of less than 10% at 1-year follow-up. The results also demonstrate that H. pylori treatment, in addition to conventional duodenal ulcer treatment, increases the speed of healing of the acute ulcer.

The nonulcer dyspepsia studies assessed clearance and not eradication of H. pylori, and validated outcome measures were not used in any of the studies. A consistent decrease in symptom severity was just as prevalent in patients in whom the organism had been cleared, as in those taking a placebo.

None of the gastric cancer studies investigated the effect of eradication of H. pylori on subsequent risk of gastric cancer.

Authors' conclusions
There is sufficient evidence to support the use of anti-H. pylori therapy in patients with duodenal ulcers who have H. pylori infection, triple therapy achieving the best results. There is no current evidence to support such therapy for nonulcer dyspepsia in patients with H. pylori infection. Much more attention should be paid to the design of nonulcer dyspepsia studies. Studies are needed to determine whether H. pylori eradication in patients with gastritis will prevent gastric cancer.

CRD commentary
This is a well-conducted review. The search strategy is fully described and the selection criteria of studies, specifically study design and quality assessment, is explicitly documented. The presentation of the methods and the conclusions reached were well supported by the data.

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

Bibliographic details

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Other publications of related interest

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