The long-term impact of Helicobacter pylori eradication on gastric histology: a systematic review and meta-analysis

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CRD summary
This review investigated the long-term effects of Helicobacter pylori eradication on gastric histology. It concluded that significant improvements in gastric atrophy, but not intestinal metaplasia, were observed with eradication. As the strength of the included evidence appeared weak (although there were few study details and no quality assessment to confirm this), the reliability of the authors’ conclusion is uncertain.

Authors' objectives
To investigate the long-term effects of Helicobacter pylori eradication on gastric histology.

Searching
MEDLINE was searched to October 2006 for English language publications. Search terms were reported. Bibliographies of retrieved studies, reviews and editorials were also searched.

Study selection
Studies in adults (over 19 years) that compared the incidence of gastric atrophy or intestinal metaplasia with and without the eradication of Helicobacter pylori, where patients were not on long-term treatment with proton pump inhibitors, were eligible for inclusion. Included studies were required to investigate antrum and corpus gastric histology separately and had to have a follow-up of at least one year.

Sample sizes ranged from 44 to 471, and follow-up from 12 to 137 months. All studies used the updated Sydney System for the histological assessment. Most studies were conducted in Japan or China.

Studies were selected independently by two reviewers.

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

Data extraction
Odds ratios and 95% confidence intervals (CI) for the incidence of gastric atrophy and intestinal metaplasia were calculated for each study.

Data were extracted by two independent reviewers using a predefined form; differences were resolved by discussion with a third reviewer.

Methods of synthesis
Pooled odds ratios and 95% CI were calculated using a random-effects model. Heterogeneity was investigated using the Cochran Q test (p<0.1). Sensitivity analyses were conducted by excluding each study in turn from meta-analyses. Publication bias was investigated using funnel plots and the Begg and Mazumdar adjusted correlation test.

Results of the review
Eight studies were included in the review (1,154 patients); one randomised controlled trial (471 patients) and seven observational studies (683 patients).

Eradication of Helicobacter pylori resulted in a significant reduction in antrum gastric atrophy (odds ratio 0.554, 95% CI: 0.372 to 0.825; p=0.004, seven studies) and corpus gastric atrophy (odds ratio 0.209, 95% CI: 0.081 to 0.538; p=0.001, five studies), but not antrum intestinal metaplasia (seven studies) or corpus intestinal metaplasia (six studies).

There was significant heterogeneity between studies in the analyses of gastric atrophy for antrum (p=0.022) and for corpus studies (p<0.001), but not intestinal metaplasia. No single study was thought to be the cause of the observed
heterogeneity.

There was no publication bias reported for any outcome

Authors’ conclusions
Significant improvement of gastric atrophy was observed with the eradication of Helicobacter pylori but not in intestinal metaplasia.

CRD commentary
The authors addressed a clear review question, with inclusion criteria specified for participants, interventions and outcomes. The search was limited, using one database plus references and restricted to English language studies only. However, the authors did report that there was no publication bias present. Both study selection and data extraction were conducted in duplicate, reducing the potential for error and bias. There was no assessment of study quality and few study details were provided, so the reliability of the included evidence could not be determined.

Most of the studies were extremely small and observational in design. There was only one randomised controlled trial (RCT), which contributed 40% of the total patient population of the review. This RCT showed a significant result in only one outcome, corpus gastric atrophy, in which it contributed 54% of the population.

As the strength of the included evidence appeared weak (although there were few study details and no quality assessment to confirm this), the reliability of the reviews’ conclusion is uncertain.

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

Research: The authors stated that more studies, especially RCTs, with longer follow-up times are required to assess the long-term benefit of treating Helicobacter pylori infection and whether a cure for Helicobacter pylori infection may confer a benefit in halting disease progression.

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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.