Cholecystectomy as a risk factor for colorectal cancer: a meta-analysis
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Authors' objectives
To evaluate whether cholecystectomy is associated with an increased risk of colorectal cancer.

Searching
A computerised search of MEDLINE was performed in addition to manual searches.

Study selection
Study designs of evaluations included in the review
Case-control studies and cohort studies were included.

Specific interventions included in the review
Cholecystectomy.

Participants included in the review
Patients with colorectal cancer and age-sex-matched controls without colorectal cancer were included.

Outcomes assessed in the review
The number of patients with colorectal cancer was assessed.

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 inclusion criteria specified: (1) controlled studies in which the controls and the cases were matched for age and gender; (2) the cholecystectomy occurred before the colorectal cancer. The authors do not state how the papers were assessed for validity, or how many of the authors performed the validity assessment.

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?
The overall log odds ratio (OR) was estimated by weighting the log of individual ORs in inverse proportion to their variance, using Woolf's or Peto's fixed-effect method (see Other Publications of Related Interest nos. 1-2). If the OR is greater than one, it indicates an increased risk of colorectal cancer in patients with cholecystectomy.

How were differences between studies investigated?
Woolf’s method (see Other Publications of Related Interest no.1) is used to test for heterogeneity between studies. Subset analyses were conducted for men and women, and for left- and right-sided colorectal cancer.

Results of the review
Thirty-four case-control studies (number of patients in these studies ranged from 140 to 33,585) and one cohort study
(200 patients) were included.

Statistical tests found significant heterogeneity among individual studies (chi-squared=49.8, d.f.=33, p<0.05). The pooled OR for all studies was 1.12 (95% confidence interval, CI: 1.03, 1.22).

Subset analyses: pooled OR for women, 1.14 (95% CI: 1.01, 1.28); pooled OR for men, 1.06 (95% CI: 0.9, 1.24); pooled OR for right-sided colorectal cancer, 1.86 (95% CI: 1.31, 2.65); pooled OR for left-sided colorectal cancer, 0.9 (95% CI: 0.69, 1.19).

Authors' conclusions
This meta-analysis showed a small but statistically-significant association between cholecystectomy and colorectal cancer, particularly for right-sided colorectal cancer. It is possible that this small observed association may be due to a publication bias for positive results or bias within the included studies.

CRD commentary
Authors gave a proper discussion about the limitations in the evidence included in this review: potential publication bias; less reliable study design (case-control study); and significant heterogeneity among studies. The observed small but statistically-significant risk of colorectal cancer after cholecystectomy needs to be interpreted with great caution because of these limitations. The description of the search strategy is very brief and may be inadequate.

Bibliographic details

PubMedID
8658039

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Adolescent; Adult; Age Factors; Aged; Bile Acids and Salts /physiology; Cholecystectomy; Colorectal Neoplasms /etiology /physiopathology; Confidence Intervals; Female; Follow-Up Studies; Humans; Male; Middle Aged; Odds Ratio; Postoperative Complications /etiology /physiopathology; Risk Factors; Sex Factors

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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.