

Proton Pump Inhibitors and Cancer Risk

An Umbrella Review and Meta-analysis of Observational Studies

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Abstract

Objectives:

Increasing evidence suggested that proton pump inhibitors (PPIs) use might affect the development of cancers, but previous conclusions remain controversial. Therefore, an umbrella review was performed to clarify the associations between PPIs and various types of cancer by summarizing the existing meta-analyses and systematic reviews.

Methods:

We searched PubMed, Cochrane Library, Embase, CNKI, Wanfang, and VIP database up to June 2022 for eligible meta-analyses or systematic reviews. The summary effect size, 95% CI, heterogeneity, small study effect, and 95% prediction interval were considered in the present study.

A Measurement Tool to Assess Systematic Review 2 and grading of recommendation, assessment, development, and evaluation were used to assess methodological quality and evidence.

Results:

The umbrella review included 21 meta-analyses containing 65 studies and 10 cancer types with 6.8 million subjects. The results showed that PPI use was significantly associated with increased risks of certain types of cancer, including gastric cancer (odds ratio [OR]: 2.07; 95% CI, 1.30 to 3.29), pancreatic cancer (OR: 1.73; 95% CI, 1.23 to 2.44), colorectal cancer (OR: 1.84; 95% CI, 1.26 to 2.67), and liver cancer (OR: 1.80; 95% CI, 1.27 to 2.54), but was not associated with esophageal cancer. In addition, PPI use was associated with decreased risk of breast cancer (OR: 0.69; 95% CI, 0.50 to 0.96).

Conclusions:

These findings suggested that clinicians should pay more attention to the occurrence of gastric cancer, pancreatic cancer, colorectal cancer, and liver cancer in patients who used PPIs, and PPI prescription should be written only when an accurate specific diagnosis has been made. Furthermore, additional PPIs to the treatment regimen may be benefit for women with a higher-than-average risk of breast cancer.

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