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Can *Helicobacter pylori* eradication affect long-term mortality?

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See Article on Page 584-595

Gastric cancer is the one of the most common cancers in Korea. From a global perspective, gastric cancer ranks third in cancer-related mortality [1]. *Helicobacter pylori* was classified as a Group 1 carcinogen for gastric cancer by the International Agency for Research on Cancer [2]. Therefore, there have been many studies on stomach cancer reduction after *H. pylori* eradication, particularly as to whether *H. pylori* eradication treatment could have a significant effect on the group at high risk for stomach cancer. Patients with early gastric cancer who received *H. pylori* treatment had lower rates of metachronous gastric cancer [3]. A recent meta-analysis of randomized controlled trials conducted in asymptomatic general populations reported a 34% reduction in the incidence of gastric cancer after *H. pylori* eradication [4]. Overall, we believe that eradication of *H. pylori* can lower the incidence of gastric cancer and may also reduce all-cause mortality. However, interestingly, one meta-analysis also demonstrated a non-significant increased risk in overall mortality with *H. pylori* treatment (risk ratio, 1.09; 95% confidence interval [CI], 0.86 to 1.38) [5]. In addition, another study demonstrated a reduced risk of gastric cancer but, again, showed a nonsignificant increased risk of all-cause mortality among patients randomized to eradication therapy compared to patients in a control group (hazard ratio, 1.95; 95% CI, 0.72 to 5.27; *p* = 0.19) [3]. These data suggest a potential harmful effect of *H. pylori* treatment in terms of increased non-gastric cancer mortality. This is a concern for a doctor prescribing eradication medicine and may damage the legitimacy of *H. pylori* eradication. However, the possible underlying mechanisms remain unclear, and this is not established theory. In Korea, gastric cancer was the most commonly diagnosed cancer in 2015, and the estimated prevalence of *H. pylori* infection was approximately 54% [6]. Therefore, unlike some other countries, this issue is of great significance in Korea.

In this issue of the *Korean Journal of Internal Medicine*, Kim et al. [7] reported their study "Effect of *Helicobacter pylori* treatment on the long-term mortality in patients with type 2 diabetes." This was a population-based retrospective cohort study using the Korean National Health Insurance Service-National Sample Cohort database and showed contradictory results compared to a previous meta-analysis in type 2 diabetes patients. Type 2 diabetes is an important risk factor for cardiovascular disease, cerebrovascular disease, and cancer [8,9]. The study of Kim et al. [7] showed that long-term overall

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mortality risk was not increased after *H. pylori* treatment in patients with type 2 diabetes. In addition, *H. pylori* treatment was not associated with an increase in mortality risk due to cardiovascular disease, cerebrovascular disease, and all cancers. During a median follow-up of 4.7 years, overall mortality was 5.9% (101/1,727 patients) among patients in the *H. pylori*-treatment cohort and 7.6% (364/3,454 patients) among patients in the non-treatment cohort. In addition, the mortality risks due to cardiovascular disease (adjusted hazard ratio [aHR], 1.34; 95% CI, 0.54 to 3.30; p = 0.529), cerebrovascular disease (aHR, 0.97; 95% CI, 0.37 to 2.55; p = 0.947), and cancer (aHR, 1.08; 95% CI, 0.68 to 1.72; p = 0.742) were not significantly different between the groups. Despite several limitations as mentioned in the article, this study gives us valuable information about the mortality risks due to cardiovascular disease, cerebrovascular disease, and overall cancers after *H. pylori* eradication. This has great significance in that the study was conducted in diabetic patients, who are a high risk group for cardiovascular disease.

In conclusion, although this had the limitation of being a retrospective study, *H. pylori* eradication can be justified not only for gastric cancer patients but also for healthy *H. pylori* carriers. A prospective long-term study should be performed to confirm this, and more research is needed to establish *H. pylori* eradication treatment as the primary preventive treatment for gastric cancer in the general population.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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