EDITORIAL

Gut and Liver, Vol. 10, No. 6, November 2016, pp. 867-868

Is It Rationale to Apply Strict Colonoscopic Surveillance in Patients with *Helicobacter pylori* Associated Chronic Atrophic Gastritis?

Ji Hyun Kim

Department of Internal Medicine, Inje University College of Medicine, Busan, Korea

See "*Helicobacter pylori* Infection with Atrophic Gastritis Is an Independent Risk Factor for Advanced Colonic Neoplasm" by Ji Young Lee, et al. on page 902, Vol. 10. No. 6, 2016

Colonic carcinogenesis is believed to be multifactorial process. In addition to hereditary and genetic factors, environmental factors such as Westernized dietary practice, smoking and alcohol consumption had also been contributed to increase the risk of colorectal cancer.[1]

There has been growing interest in the relationship between infectious agents and colonic carcinogenesis. Especially, *Helicobacter pylori*, which is ubiquitous pathogen inducing chronic inflammation and eventually leading to development of chronic gastritis, peptic ulcer and even gastric cancer. There is also conflicting evidence on the relevance of chronic *H. pylori* infection as a risk factor for colorectal neoplasia.[2,3]

Several pathophysiologic mechanisms had been also suggested for this correlation between colorectal neoplasm and *H. pylori* infection. Increased serum gastrin caused by persistent *H. pylori* infection, which is estimated to have trophic effect on colonic mucosa, could contribute to colorectal carcinogenesis,[4] although this hypothesis was disputed by other reports showing discordant results.[5] The facts that measurement of nonamidated gastrin which seems to act as more important carcinogen of colorectal carcinoma is not available, and autocrine secretion of gastrin by colorectal cancer cells themselves may explain these inconsistent results.

Intestinal dysbiosis induced by *H. pylori*-related chronic atrophic gastritis resulting in hypochlorhydria was supposed to be another contributory to the colorectal carcinogenesis.[6,7]

Although *H. pylori* is known as not to invade colonic mucosa, study reporting fecal shedding of viable *H. pylori* suggested the it may move through colonic lumen and locally activate colonic carcinogenesis. Study reporting higher detection rate of *H. pylori* in neoplastic lesion than normal mucosa also supported this hypothesis,[8] although exact pathophysiologic mechanism of *H. pylori* induced local activation of carcinogenesis should be evaluated.

Enhanced systemic inflammatory response caused by *H. pylori*, especially by Cag A-positive *H. pylori* infection, also had assumed to play a causative role in colorectal carcinogenesis.[4]

Although the insufficient evidence for a definitive causal relationship, it appears that *H. pylori* related gastritis is associated with an increased, although modest, risk of colorectal adenoma and cancer.

Lee *et al*.[9] tried retrospective cross-sectional study to evaluate the correlation between *H. pylori*, atrophic gastritis and colorectal neoplasm using a single center health check program. Authors analyzed 6,351 subjects who underwent screening colonoscopy and *H. pylori* infection was confirmed with serology testing IgG antibody. This study showed *H. pylori* infection was a significantly associated with overall colorectal neoplasm. In addition, presence of atrophic gastritis, which was known as a precancerous environment, enhanced this correlation, especially advanced colorectal neoplasm, even after adjusting the confounding factors such as age, gender, family history of colorectal cancer, body mass index, metabolic syndrome, smoking and alcohol consumption (odds ratio [OR], 1.40; 95% confidence interval [CI], 1.03 to 1.91). Further subgroup analysis showed *H. pylori* seropositivity state which was not accompanied with atrophic gastritis was revealed not to be associated with colorectal neoplasm. Although atrophic gastritis was defined based on the endoscopy which retained indispensable bias originating from interobserver difference, those results is meaningful data

Correspondence to: Ji Hyun Kim
Department of Internal Medicine, Inje University Busan Paik Hospital, Inje University College of Medicine, 75 Bokji-ro, Busanjin-gu, Busan 47392, Korea
Tel: +82-51-890-6930, Fax: +82-51-892-0273, E-mail: zep2000@inje.ac.kr
pISSN 1976-2283 eISSN 2005-1212 https://doi.org/10.5009/gnl16445

for explaining the relationship between chronic inflammatory processing mediated by *H. pylori* infection and colorectal carcinogenesis, especially proximal colon cancer. This result was somewhat concordant with previously reported case-control study reporting association of prevalence of *H. pylori* infection and higher histopathologic severity or advanced type of colonic neoplasms.[10]

When it comes to the relationship between *H. pylori* infection and location of colorectal neoplasms, studies provided conflicting results. Animal model-based experimental study reported that mitogenic effect of gastrin is prominent in left colon. On the other hand, aberrant DNA methylation resulting from overproduction of bile acids by bacterial overgrowth has known to be associated with proximal colon neoplasms. A population-based case control study conducted in Japan reported proximal adenoma risk increased as the degree of *H. pylori*-related gastritis increased, showing maximal increase in chronic atrophic gastritis group.[2] Lee *et al*.[9] also reported increased prevalence of proximal colon neoplasms in stepwise manner according to the *H. pylori* seropositivity and presence of atrophic gastritis, showing highest OR (1.29; 95% CI, 1.10 to 1.51) in *H. pylori* (+)/atrophic gastritis (+) group. Author's also suggested that methylation change in proximal colon caused by atrophic gastritis induced colonic bacterial overgrowth may be the reason for the results.

Possibly, based on these results, we can consider strict colonoscopic surveillance in *H. pylori* infected subjects, especially in subjects accompanied with atrophic gastritis, gastric adenoma and gastric cancer. In addition, effect of eradication therapy on the risk of advanced colorectal neoplasms will be problem for future study.

CONFLICTS OF INTEREST

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

REFERENCES

1. Le Marchand L, Wilkens LR, Kolonel LN, Hankin JH, Lyu LC. Associations of sedentary lifestyle, obesity, smoking, alcohol use, and diabetes with the risk of colorectal cancer. Cancer Res 1997;57:4787-4794.
2. Inoue I, Mukoubayashi C, Yoshimura N, et al. Elevated risk of colorectal adenoma with Helicobacter pylori-related chronic gastritis: a population-based case-control study. Int J Cancer 2011;129:2704-2711.
3. Chen XZ, Schöttker B, Castro FA, et al. Association of helicobacter pylori infection and chronic atrophic gastritis with risk of colonic, pancreatic and gastric cancer: a ten-year follow-up of the ESTHER cohort study. Oncotarget 2016;7:17182-17193.
4. Hartwich A, Konturek SJ, Pierzchalski P, et al. Helicobacter pylori infection, gastrin, cyclooxygenase-2, and apoptosis in colorectal cancer. Int J Colorectal Dis 2001;16:202-210.
5. Selgrad M, Bornschein J, Kandulski A, et al. Helicobacter pylori but not gastrin is associated with the development of colonic neoplasms. Int J Cancer 2014;135:1127-1131.
6. Wang X, Allen TD, May RJ, Lightfoot S, Houchen CW, Huycke MM. Enterococcus faecalis induces aneuploidy and tetraploidy in colonic epithelial cells through a bystander effect. Cancer Res 2008;68:9909-9917.
7. Toprak NU, Yagci A, Gulluoglu BM, et al. A possible role of Bacteroides fragilis enterotoxin in the aetiology of colorectal cancer. Clin Microbiol Infect 2006;12:782-786.
8. Soylu A, Ozkara S, Alis H, et al. Immunohistochemical testing for Helicobacter pylori existence in neoplasms of the colon. BMC Gastroenterol 2008;8:35.
9. Lee JY, Park HW, Choi JY, et al. Helicobacter pylori infection with atrophic gastritis is an independent risk factor for advanced colonic neoplasm. Gut Liver 2016;10:902-909.
10. Sonnenberg A, Genta RM. Helicobacter pylori is a risk factor for colonic neoplasms. Am J Gastroenterol 2013;108:208-215.