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The changing epidemiology of Asian digestive cancers: From etiologies and incidences to preventive strategies



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A B S T R A C T

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Digestive cancers are a major health burden in Asia. Due to the presence of similar “infection-inflammation-cancer” pathways in the carcinogenesis process, eradicating infective pathogens or attenuating relevant inflammatory signaling pathways may reduce digestive cancer incidences and improve patient outcomes. The aim of this paper is to review the recent evidence regarding the epidemiology of three major digestive cancers in Asia: stomach cancer, liver cancer, and colorectal cancer. We focused on the incidence trends, the major etiologies, and especially the potential preventive strategies.

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Abbreviations: HBV, Hepatitis B virus; HCC, hepatocellular carcinoma; CHB, chronic hepatitis B; NHIRD, National Health Insurance Research Database.

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Introduction

Digestive cancers remain a major health burden worldwide, especially in Asia. With the rapid progress in socioeconomic status and health care in the past decade, digestive cancer etiologies, incidences, and preventive strategies in many Asian countries have changed dramatically. Changing dietary habits, increasing incidence of metabolic syndrome, and improved health care have led to more cases and improved patient outcomes, eradicating or reducing etiologies and altering the epidemiology of digestive cancers in Asia.

In Asian countries, digestive cancers share similar “infection-inflammation-cancer” pathways in the carcinogenic process. Eradicating infective pathogens or attenuating the relevant inflammatory signaling pathways may reduce digestive cancer incidences and improve patient outcomes. Our previous population-based studies have suggested that eradicating *Helicobacter pylori* (*H. pylori*) reduces gastric cancer incidence [1] and that antiviral therapy reduces hepatocellular carcinoma (HCC) incidence in patients with chronic hepatitis B (CHB). Antiviral therapy also decreases HCC recurrence in patients with hepatitis B virus (HBV) or hepatitis C virus (HCV) infection after curative resection [2–4]. In addition, non-steroidal anti-inflammatory drugs (NSAIDs) reduce gastric cancer incidence, especially in patients infected with *H. pylori* [5]. NSAIDs also prevent HCC early recurrence after liver resection [6].

The aim of this paper was to review the recent evidence, regarding the epidemiology of three major digestive cancers in Asia: stomach cancer, liver cancer, and colorectal cancer (CRC). Systematic review, meta-analysis, randomized clinical trials, and population-based cohort studies are the major types of evidence discussed. We focused on the incidences in different Asian regions, the time trends of incidence rate change in the past decade, the major etiologies of these digestive cancers, and especially the potential preventive strategies, including screening and chemopreventive methods.

Stomach cancer

Incidence

Stomach cancer is the fifth most common cancer and the third leading cause of cancer-related mortality globally [7]. Men have 2- to 3-fold higher stomach cancer risk when compared with women. Incidence rates of stomach cancer vary significantly among Asian countries. East Asia has the highest incidence rates. On the contrary, Southeast and South Central Asia have low risks of stomach cancer [7]. It is estimated that China, Japan and Korea account for more than 60% of gastric cancer cases. The age-standardized rates of gastric cancer in Korea, Mongolia, Japan and China are estimated to be 41.8, 32.5, 29.9 and 22.7, respectively. However, the incidence rates among men in East Asia declined rapidly from 42.4 per 100,000 in 2005 to 35.4 per 100,000 in 2012. The rates of stomach cancer in other regions of Asia have remained stable over the past decade [7].

Cardia versus non-cardia stomach cancer

Stomach cancer is traditionally classified into cardia and non-cardia gastric cancer. Cardia gastric cancer arises from regions near the esophageal-gastric junction and shares common risk factors with esophageal adenocarcinoma. Non-cardia gastric cancer arises from more distal parts of the stomach and correlates with *H. pylori* infection. In East and Southeast Asia, the estimated incidences of cardia and non-cardia stomach cancer are 8.7 and 21.7 per 100,000 for men, respectively, and 2.4 and 9.5 per 100,000 for women, respectively. The incidences of non-cardia stomach cancer are approximately 3–4 times those of cardia stomach cancer. In Central and West Asia, the estimated incidences of cardia and non-cardia stomach are relatively low and the incidence ratio is about 1.5–3 for non-cardia cancer versus cardia cancer [8].

Helicobacter pylori

Gastric carcinogenesis is a multifactorial process that involves the host inflammatory response to environmental factors. Among the environmental factors, *H. pylori* infection is considered the major etiology of gastric cancer. However, only a limited number of patients infected with *H. pylori* develop

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