Recommendations for Gastric Cancer Screening
in Korean Americans

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Abstract:

In the United States, Korean Americans have the highest incidence rate of gastric cancer and have a five times higher risk than non-Hispanic Whites. Early detection is important for cancer treatment and survival. In countries where there is a high prevalence of gastric cancer, such as Korea and Japan, national screening programs have been implemented. In the United States, immigrants of countries like Korea and Japan continue to have many of the same risk factors as in their home country. However, recommendations for gastric cancer screening in the United States are lacking, even for these high-risk populations. We conducted a literature search of relevant information to identify appropriate screening measures and criteria for gastric cancer screening for Korean Americans. Based on the data from the Korean national screening program, the proportion of gastric cancers diagnosed at an earlier stage increased significantly.
Furthermore, endoscopic screening was associated with a decrease of about 50% in gastric cancer death risk for those between 40 and 74 years old. Therefore, there is a similar need for screening for Korean Americans who have a similar diet and lifestyle as native Koreans. By increasing early detection, routine screening via endoscopy in high-risk Korean Americans may have a significant impact on decreasing the morbidity and mortality associated with gastric cancer, as seen in the Korean studies.

**Introduction:**

Gastric cancer is the fifth most diagnosed cancer and is the third leading cause of cancer deaths in the world [1]. In Korea, gastric cancer is the second leading cause of cancer, while in the United States it is the 15th most common cancer [2]. In the United States, Korean Americans have the highest incidence rate of gastric cancer and are at a five times higher risk than non-Hispanic Whites [3].

Gastric cancer is often silent in its early stages and by the time symptoms present the cancer may have advanced beyond the point of curative resection. Thus, early detection is important for cancer detection, treatment, and survival. In countries where there is a high prevalence of gastric cancer, such as Korea and Japan, national screening programs have been implemented. In the United States, immigrants of countries like Korea and Japan continue to have many of the same risk factors as in their home country. However, recommendations for gastric cancer screening in the United States are lacking, even for these high-risk populations. We hypothesize that routine screening in high-risk Korean Americans can significantly improve mortality rates. We conducted a literature search of relevant information to identify appropriate screening measures and criteria for screening to support our hypothesis.
Incidence and Mortality:

In the United States, 26,380 patients are estimated to be diagnosed with gastric cancer in 2022, with an expected mortality rate of approximately 42% [4]. 

_H. pylori_ is regarded as the major cause of gastric cancer. It is associated with 75-78% of all gastric cancers [5]. In addition, cigarette smoking has been associated with an increased risk of gastric cancer and can increase risk by 50-60% [6]. In a community-based study by Kim et al., a longer duration of cigarette smoking increased the risk of gastric cancer development in Korean men [7]. A diet rich in salty and smoked foods has also been identified as a risk factor for the high incidence of gastric cancer in the Korean population [8-9]. Compared to Americans, Koreans consume about 1.4 times the amount of salt daily [10]. In a hospital-based case-control study in Seoul, South Korea, 69 patients diagnosed with early gastric cancer were tested for _H. pylori_ infection status and evaluated for dietary habits. Adaptive salt concentration, particularly the intake of salt-fermented fish and kimchi, staples of a traditional Korean diet, was significant and positively associated with early gastric cancer risk (p<0.01) while clear broth, raw vegetables, fruits, and soybean curds were associated with decreased risk. Of note, subjects with positive _H. pylori_ infection and high salty preference had a 10-fold increased risk of early gastric cancer [11]. A meta-analysis including 11 studies showed a significant positive association between a high salt diet and gastric cancer compared to a low salt diet (OR, 2.05; 95% CI, 1.60 to 2.62) [12]. Many Korean immigrants to the United States, especially those who live in areas heavily populated by other Koreans, tend to continue a traditional Korean diet rather than adopt a more Westernized diet. According to the 2009 American Community Survey, the three metropolitan areas with the highest Korean American populations are the greater Los Angeles combined statistical area, greater New York combined statistical area, and the Baltimore-Washington Metropolitan area. The 2010 United States Census found that the per capita Korean American population of Bergen County, NJ (NYC metropolitan area) was 6.3%, the highest of any county in the United States.
States. In these populations, the Korean community is so developed that many immigrants can easily obtain traditional foods such as kimchi and cured proteins. Though the prevalence of H. pylori is decreased in developed nations such as the United States, other risk factors such as cigarette smoking and age are unchanged, in addition to consuming a traditional Korean diet. Thus, their risk factors do not change significantly, and we must consider aggressive screening in these high-risk populations, as in their nations of origin.

Screening:

Japan and South Korea are among the Asian countries with the highest gastric cancer incidence in the world [13]. Because early detection of gastric cancer is associated with a favorable prognosis, Japan and South Korea have implemented national screening programs for average-risk populations. Japan has conducted mass gastric cancer screening using upper gastrointestinal series since 1960 resulting in improved survival rates [14-15]. In Korea, a nationwide gastric cancer screening program was started in 1999 as part of the National Cancer Screening Program (NCSP) [16]. According to the NCSP, biennial gastric cancer screening is recommended for men and women aged 40 years or older, by either upper-gastrointestinal series (UGIS) or endoscopy [17].

The results of the NCSP were favorable with a gastric cancer detection rate of endoscopy screening that was 3.9 times higher than UGIS. The sensitivity of endoscopy and UGIS screening to detect gastric cancer was 69.0% and 36.7%, respectively, and the specificity was 96.0% and 96.1%, respectively [17]. A Japanese study found that the rate of gastric cancer detection by endoscopy was similar. The results showed that detection by endoscopy was 2.7-4.6 times higher than UGIS [18]. The increased detection by endoscopy can be attributed to its ability to identify lesions of the stomach mucosa that can be missed by conventional barium
exams [19]. Overall, the superior performance of endoscopy compared with UGIS screening supports the hypothesis that endoscopy screening may have a larger impact on gastric cancer mortality [17-19]. Despite the favorable results in the native screening programs, endoscopy has not been accepted in routine screening due to associated risks and lack of evidence in the United States [20].

According to the results of the NCSP, the introduction of endoscopy screening for gastric cancer in the average-risk population appears to perform better than UGIS screening. Since the NCSP began in Korea, the proportion of gastric cancers diagnosed at an earlier stage increased from 39% in 2001 to 73% in 2016. Furthermore, endoscopic screening was associated with about a 50% decrease in gastric cancer death risk for those between 40 and 74 years old [21]. A pilot study on patterns of endoscopy use in Korean American gastric cancer patients showed that Korean Americans are at over five times the risk of gastric cancer compared to non-Hispanic Whites. Even though Korean Americans are diagnosed at an earlier stage compared to other groups in the United States, they are diagnosed at a later stage than those in South Korea [22].

Conclusions:

In the United States, Korean Americans have the highest incidence rate of gastric cancer and have a five times higher risk than non-Hispanic Whites. Early detection is important for cancer treatment and survival. In countries where there is a high prevalence of gastric cancer, such as Korea and Japan, national screening programs have been implemented. In the United States, immigrants of countries like Korea and Japan continue to have many of the same risk factors as in their home country. However, recommendations for gastric cancer screening in the United States are lacking, even for these high-risk populations. Since the national screening program began in Korea, the proportion of gastric cancers diagnosed at an earlier stage increased from
39% in 2001 to 73% in 2016. Furthermore, endoscopic screening was associated with about a 50% decrease in gastric cancer death risk for those between 40 and 74 years old. A pilot study on patterns of endoscopy use in Korean American gastric cancer patients showed that Korean Americans are at over five times the risk of gastric cancer compared to non-Hispanic Whites. Even though Korean Americans are diagnosed at an earlier stage compared to other groups in the United States, they are diagnosed at a later stage than those in South Korea. Therefore, based on the endoscopic screening recommendations in Korea, the need for similar screening for Korean Americans should be considered. By increasing early detection, routine screening via endoscopy in high-risk Korean Americans can significantly decrease the morbidity and mortality associated with gastric cancer, as seen in the Korean studies. In conclusion, the data reviewed supports the hypothesis that endoscopy screening may have a significant impact on decreasing gastric cancer mortality in high-risk Korean Americans.

References


