Screening and Treating Intermediate Lesions to Prevent Gastric Cancer

Noriya Uedo, MD[a,*], Kenshi Yao, MD[b], Ryu Ishihara, MD[a]

KEYWORDS

- Early gastric cancer • Screening • Endoscopy • Narrow-band imaging
- Endoscopic mucosal resection • Endoscopic submucosal dissection
- Mucosal high-grade neoplasia

KEY POINTS

- Early gastric cancer is defined as adenocarcinoma confined to the mucosa or submucosa irrespective of lymph node involvement. In Japan, mucosal high-grade neoplasia is diagnosed as intramucosal early gastric cancer.
- Some early gastric cancers progress to advanced gastric cancer after several years of follow-up.
- A proper endoscopic screening procedure would increase the detection of intramucosal early gastric cancer.
- Image-enhanced endoscopy (ie, chromoendoscopy), narrow-band imaging, and magnifying endoscopy increase the diagnostic yield for characterization of early gastric cancer.
- Endoscopic resection of intramucosal early gastric cancer with endoscopic mucosal resection or endoscopic submucosal dissection is currently performed in East Asian countries to prevent the development of advanced gastric cancer and to preserve patients' quality of life after treatment.

A video of a case of superficial elevated early gastric cancer accompanies this article at http://www.gastro.theclinics.com/

Conflict of Interest: No conflict of interest or funding to be declared.
Author Contributions: Conception and design, Noriya Uedo; analysis and interpretation of the data, Noriya Uedo; drafting of the article, Noriya Uedo; critical revision of the article for important intellectual content, Ryu Ishihara and Kenshi Yao; final approval of the article, Noriya Uedo, Ryu Ishihara, and Kenshi Yao.
[a] Department of Gastrointestinal Oncology, Osaka Medical Center for Cancer and Cardiovascular Diseases, 3-3 Nakamichi 1-chome, Osaka 537-8511, Japan; [b] Department of Endoscopy, Fukuoka University Chikushi Hospital, Fukuoka, Japan
* Corresponding author. Department of Gastrointestinal Oncology, Osaka Medical Center for Cancer and Cardiovascular Diseases, 3-3 Nakamichi 1-chome, Higashinari-ku, Osaka 537-8511, Japan.
E-mail address: uedou-no@mc.pref.osaka.jp

Gastroenterol Clin N Am 42 (2013) 317–335
http://dx.doi.org/10.1016/j.gtc.2013.01.007 **gastro.theclinics.com**
0889-8553/13/$ – see front matter

BACKGROUND

Gastric cancer is currently the fourth most common malignancy and the second most common cause of cancer deaths worldwide. Half the global total of gastric cancer occurs in East Asia. Age-standardized mortality rate is estimated as the highest (28.1 per 100,000 in men and 13.0 per 100,000 in women) in East Asia, whereas that in the United States is low (2.8 per 100,000 in men and 1.5 per 100,000 in women).[1] Early detection and treatment are considered to be effective strategies in reducing mortality from gastric cancer as a secondary prevention. Thus, many attempts have been made in this direction, such as encouragement of mass screening[2,3] or the development of accurate diagnostic procedures in East Asian countries.

DEFINITION OF EARLY GASTRIC CANCER

Early gastric cancer (EGC) was first defined in 1962 by the Japanese Society of Gastroenterological Endoscopy as adenocarcinoma confined to the mucosa or submucosa irrespective of lymph node involvement.[4] The need for such a definition was based on the observation that this type of gastric cancer has a favorable prognosis; 5-year survival rates are greater than 95%.[5] The fact that lymph node or distant metastasis is uncommon explains the good prognosis for EGC. Lymph node invasion exists in 10% to 20% of cases; however, the metastatic lymph nodes of EGC are mostly restricted to a few regional nodes (N1).[6] Therefore, gastrectomy with lymph node dissection shows an excellent outcome in patients with EGC. Moreover, the presence of nodal metastases is closely related to the depth of local invasion. When EGC is confined to the mucosa, lymph node involvement is much less common ($\leq$3%).[7] With the increase in the detection rate of EGC throughout the country, the Japanese national records show that the percentage of EGC among resected cases was 40% in 1985.[8]

Many investigators attribute the high incidence of gastric carcinoma in East Asia to dietary[9,10] and genetic factors,[11,12] and to *Helicobacter pylori* infection.[13,14] The high detection rate of EGC in Japan and Korea is explained by the availability of population-based screening programs. In addition, there are differences between the Japanese and Western criteria for the diagnosis of EGC that are considered relevant.[15] In Western countries, gastric cancer is diagnosed when invasive growth of the neoplasm into the lamina propria of the mucosa or beyond is evident.[16] By contrast, Japanese pathologists often use the term EGC for intramucosal lesions that Western pathologists classify as precursor lesions termed dysplasia or adenoma.[17] In the authors' opinion, this discrepancy does not express a biological difference in the tumor itself, but represents a difference of conception and terminology. Western pathologists diagnose high-grade dysplasia as a lesion that does not yet have malignant potential, but probably could develop it over time. Japanese pathologists diagnose EGC as a lesion that has malignant potential but has not yet expressed it. In practice, a biopsy diagnosis of high-grade dysplasia in the West or carcinoma in Japan would lead to consideration of therapeutic resection in both scenarios. Recently, a new system of categories classifying gastrointestinal neoplasia (ie, the Vienna classification) has been proposed (**Table 1**) to bridge the East-West gap.[18] Intramucosal EGC in the Japanese classification corresponds to mucosal high-grade neoplasia (Category 4) in this revised Vienna classification. The classification is important in transferring interpretations of epidemiologic, clinical, and pathologic studies from one arena to the other. This article regards EGC, including intramucosal EGC, as "intermediate lesions" for developing gastric cancer.